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The Framing of a Fetus: An Analysis of Fetal Ultrasounds on YouTube

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ABSTRACT OF THE DISSERTATION

Framing of a Fetus: An Analysis of Fetal Ultrasounds on *YouTube*

by

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With state governments blocking access to abortion across the United States, coupled with the risk of Roe v. Wade being overturned and exacerbated by the historical criminalization of pregnant people for solitary positive drug tests, now is the time to scrutinize society's complicated perception of reproduction and life. Through a consideration of fetal ultrasounds on YouTube, this dissertation is concerned with the broadcasting of fetal ultrasounds and how this

broadcasting of ultrasounds by users on YouTube contributes to the strengthening of common political discourses around fetal personhood and the linking of ultrasounds to notions of affect.

I contextualize ultrasounds as a visualizing technology mapping their lineages to World War II submarine warfare and diagnostic medicine. Through a visual analysis of fetal ultrasounds on YouTube, I present how collective ideas of fetal personhood are co-produced by users and commenters with these videos often located indirectly in political debates regarding abortion. Finally, I pivot from the fetal ultrasounds' visuality towards their sound to ground the powerful claim of "fetal heartbeats." I do so through at-home non-medical fetal dopplers, a monitoring device that uses ultrasound but does not provide a visual image. I claim that fetuses continue to be highlighted despite the absence of a visual spectacle. Additionally, I read fetal dopplers through a more extensive biopolitical history of Black visibility and invisibility, maternal-fetal conflict, and discourses of care with historical lineages to 1662 Partus Sequitur Ventrem, the 1986 War on Drugs, 1990s criminalization of pregnant Black women, and modern fetal heartbeat legislation. Moreover, employing theories from critical digital studies and feminist science and technology studies, this dissertation highlights how existing mechanisms that empower fetuses and disempower pregnant people and directly contribute to the evolving nature of fetal rhetoric can be found on video and image sharing platforms like YouTube.

The dissertation of Shaina Goel is approved.

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Introduction

Since I can remember, I've been aware of the matrilineal descent in Judaism. Matrilineal descent is an accepted tradition for many Jewish denominations even without its written history. This tradition empowered me, a Jewish daughter who has only ever been in interfaith relationships. I began to consider why and how theology is biologically passed down through a mother? What was it about biological reproduction that made it so powerful? How did matrilineal descent apply to birth, reproduction, and status in other cultures? This natural and theological enmeshing was political as it was another instance where a gendered body was a powerful vehicle for specified population growth. This tradition meant that there would be no Jewish population without Jewish women. Under this custom, one could publicly identify as Jewish but not be accepted by Jewish communities if they did not biologically descend from a Jewish mother.

Matrilineal descent and its connection to specific population growth have a deep history in the United States, beginning with *Partus Sequitur Ventrem,* translated to "offspring follows belly." This ruling from 1662 colonial Virginia preserved the hereditary descent of enslavement through generations by dictating its' matrilineality.[1] This ruling both fundamentally sustained the production of enslaved people while providing an economic incentive for reproductive control over enslaved people.[2] Moreover, matrilineal descent is one of many biopolitical tools impacting, designing, and controlling populations through the centering of a pregnant person's intrinsic role in society. On a more discursive level, this tool, and others like it, influence

[1] Morgan, J. L. (2018). *Partus sequitur ventrem: Law, race, and reproduction in colonial slavery.* Small Axe, 22 (1), 4. https://doi.org/10.1215/07990537-4378888.

[2] Dorothy E. Roberts, *Killing the Black Body,* 47-48.

contemporary rhetoric on pregnancy, reproduction, and fetal protections. It's ironic as the tradition empowers women while relegating them to a particular and laborious task.

Matrilineal descent in Judaism is neither the only tradition nor means for perpetuating the paradoxes of human reproductive discourse in the United States. My dissertation, concerned with the contradictions of human reproductive discourse in the US, is more interested in historicizing the empowerment of the fetus and how this empowerment influences society's perception of reproduction and life. The imbuing of a fetus with affective qualities is done both on and offlin.Still, online case studies provide a unique and documented space that has consistently prioritized fetal ultrasound imagery outside of the scientific sphere. My dissertation does not seek to answer whether these technologies are empowering or not, whether ultrasounds, perpetuate fetal personhood or save lives more often than not. Additionally, I do not choose to research reproduction in online spaces only because it provides unique documentation outside the scientific sphere. I insist that reproductive technologies pre-existed the digital, but that digital technologies have uniquely amplified the entanglement of affect and diagnostic technology. This dissertation highlights this entanglement in both its evident and disguised manifestations online. The reproductive technology of interest for this project is the ultrasound, sometimes referred to as the sonogram. As I will make evident in chapter one, the ultrasound was invented outside of the medical-industrial complex with a clear biopolitical lineage to the development of tools of warfare. The ultrasound's use in medicine was a byproduct of previous State-funded research that would eventually lead to its application in obstetrics and gynecological diagnosis. Alongside the popularizing of ultrasounds in medicine came the popularizing of visualizations of fetuses. Fetal ultrasound images and videos would enter

popular culture in the form of advertisements, sensational articles, and legislation, to name a few. This would come to impact how fetuses are talked about and conceptualized on and offline. My dissertation theorizes on this rhetoric, specifically on YouTube, arguing that an ultrasound's diverse appropriation on video-sharing platforms connects the technology to affective fetal rhetoric that connotes a gendered and protected fetus.

Although not exclusively, many of my case studies are in the form of ultrasounds, a sound-produced imaging device. This device is a fruitful point of departure with its boutique applications by non-medical experts. Sonograms are now accessible to pregnant folks who desire documents of their internal bodily functions, mostly their fetus, for non-medical reasons. An ultrasound is a reproductive technology; it assists in monitoring a fetus and diagnosing any abnormalities. Feminist science and technology scholars writing on reproductive technologies consider these technologies' alternative narratives highlighting how they can be seen as progressive for women's liberation. When considered through discourse, gender and race present alternative narratives about such technological solutions. These alternative narratives and more intersectional approaches to histories steer us away from absolutes and binaries, reminding us that technical solutions are accessible and marketed for white bodies.[3] This includes publishing one's personal and scientific bodily documents online. This phenomenon is an example of community-oriented behavior that is enjoyable, profitable, and safe for laypeople. Through a material-discursive framework, I will closely analyze online material, some of which are silent

[3] For my research, I define the body as human corporeality coupled with its social construction. This corporeal human body is not homogeneous nor exclusively able-bodied. It is absolutely gendered and within a particular social and discursive formation. This body can; therefore, counter the hegemonic structures that construct it (i.e. a pregnant man's body). Despite the gendered nature of the word maternal, I hope to apply it in this dissertation with a sense of gender fluidity as the act of 'mothering' is not specific to one gender.

fetal ultrasound YouTube videos.

Borrowing from Foucauldian body theory and feminist Science and Technology Studies' material-discursive framework, I argue that human reproduction on YouTube reflects some of the most crucial debates on reproductive legislation and technologies. These platforms represent how popular culture appropriates and redefined scientific material for political purposes. On YouTube specifically, attention is pivoted away from the pregnant patient and instead towards a developing fetus.[4] The framed focus on a fetus amplifies documents' affective qualities and supports fetal personhood. This framing is paralleled in popular and political culture. There still exists policies in various states that necessitate patient viewing of fetal ultrasounds before deciding to abort a pregnancy. These documents have affective potential both in and outside of science, and viewers are conditioned to conflate seeing and knowing.[5] I purposefully use the term potential to highlight that ultrasounds are exclusively affective through human involvement and interpretation. I want to consider reproduction on the internet in a similar way to how feminist STS scholars have discussed fertility controlling devices and practices- by highlighting the unequal use of such technologies and how this unequal treatment directly connects to race, class, and more significant attempts to control human reproduction and reproductive health.[6] By

[4] The subject/object positioning where the fetus garners the attention of online viewers and policy makers more than the reproducing body maintains present political and religious ideology that the fetus is a human with protections.

[5] Science, in my work, should be treated as both an institution and a body of knowledge that continues to evolve and cannot be responsibly considered outside of society, politics, or culture. Informed by Ruth Hubbard's famous essay, "Science, Facts and Feminism", my defininton of science acknowledges that science is socially produced and shaped by, as Hubbard states, "university-educated, economically privileged, predominantly white men", 5.

[6] Fertility controlling devices and practices are defined in my research as any apparatus, device, technology or medication that assists in or seeks to minimize the likelihood of a pregnancy. This can be in the form of controlling menstruation and ovulation or assisting in fertilization as well as other more nefarious forms of control like eugenic sterilization. Fertility controlling and monitoring devices can also assist in prenatal care in the form of fetal monitoring through ultrasounds. A study of fetal ultrasounds on the internet expands our understanding of these documents by highlighting the belief systems that accompany US domestic and international attempts to control reproduction and reproductive health.

considering fetal ultrasounds in popular online spaces, I highlight the publicness of reproductive experiences and discourses. But, I do not attempt to consider whether publishing the documentation of one's internal organs online is oppressive or liberating. Instead, I seek to call attention to this complicated phenomenon. It reflects more extensive conversations about the aggressive history of ultrasounds, maternal-fetal conflict in the United States, and fetal discourse and legislative engagement online and offline.

A critical conceptual approach to my work is a material-discursive framework. Simply put, this framework is the entanglement of discourse and materiality.[7] It is an approach that acknowledges how both are threaded together in one another's domains. As Karen Barad states in "Posthumanist Performativity," when discussing sexuality and the ways it has been given meaning through discourse in and outside of the social sciences, materiality too has been "figured within a linguistic domain."[8] Many theorists and scholars use this approach, sometimes working off of one another, like Karen Barad with Michel Foucault. Foucault popularly engaged with the "relationship between the material and the discursive" through the Panopticon.[9] Barad does the same but through the piezoelectric transducer and fetal ultrasounds. She is not alone in approaching ultrasound technology through material and discursive dimensions. In *Meeting the Universe Halfway*, she mentions how Alice Adams, Dion Farquhar, and Teresa Ebert all highlight materialist elaborations of the body through fetal

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[7] I am using materiality in its simplest definition, as the material quality or character of something.

[8] Barad, Karen. "Posthumanist Performativity: toward an Understanding of How Matter Comes to Matter." *SIGNS: Journal of Women in Culture and Society,* vol. 28, no. 31 (2003). 801-831.

[9] Ibid., 191.

ultrasounds by highlighting the implementation and accessibility of the technology and; therefore, its link to economics, geopolitics, and racialized poverty.[10] A material-discursive framework will also provide a method for considering gender and subject/object positionality through the material apparatus of the sonogram and the device by which folks watch published sonograms on Youtube. Influenced by Physicist Niels Bohr, Barad's critique of a scientific theory is foundational to how I will apply a material-discursive framework as it assumes that observation is not an undistorted mode of discovery. As Barad and Bohr both argue, one cannot separate the object from the agencies of observation. states, "...there is no unambiguous way to differentiate between the object and the agencies of observation".[11] I will now provide a more detailed example of how Barad's conceptualizations relate to my work.

An internet user's interpretation of their self-observation via a fetal ultrasound has developed into a bond that exists before birth, supporting claims that a fetus is a protected person with gender and the right to life. This configuration is a discursive practice with a relationship to material phenomena.[12] The material phenomenon is vast, but, on an individual level, is evidenced by the ethnographic work of scholar Rayna Rapp who talked to pregnant individuals who actively pursued their husband's observation of the fetal ultrasound in hopes of increased engagement in the pregnancy. Discursive practices developing fetal personhood and

[10] I am specifically referencing Chapter five, "Getting Real: Technoscientific Practices and the Materialization of Reality" in Barad's book *Meeting the Universe Halfway*.

[11] *Meeting the Universe Halfway*, 196. Bohr's term for this inseparability is 'quantum wholeness'.

[12] Karen Barad. "Posthumanist Performativity: toward an Understanding of How Matter Comes to Matter," 814. "This account refuses the representationalist fixation on 'words' and 'things' and the problematic of their relationshiality, advocating instead a causal relationship between specific exclusionary practices embodied as specific material configurations of the world (i.e., discursive practices/ (con)figurations rather than 'words) and specific material phenomena (i.e., relations rather than 'things'). This causal relationship between the apparatuses of bodily production and the phenomena produced in one of "the agential intra-action." 814.

"bonds before birth" configure into material support for legislation thatwill continue to eliminate opportunities for individuals to decide whether they want to terminate their pregnancies. Therefore, the Foucauldian notion of biopolitics is crucial to my material-discursive approach to fetal ultrasounds and reproductive-controlling technologies.

Michel Foucault has often been cited by feminist theorists as biopolitics often serves as a productive theory for thinking through reproductive technologies and population control. Biopolitics, as defined by Foucault in *The Birth of Biopolitics*, is a method for governing a population through the management, ordering, and control of humans.[13] This technology of power often uses scientific knowledge to ensure social control over the body. Feminist theorists have often criticized Foucault for bypassing the discussion of women and gender construction in his writing on sexuality.[14] While acknowledging limitations to Foucauldian theories, feminist theorists continue to compensate for his many gaps as they write on biopolitics alongside gender and race. Feminist critiques of technoscience expand Foucauldian biopolitics by re-centering women's bodies in the conversation of social control through technology. While not the only method, it is through the management of fertility that populations are constrained and monitored by nation-states and governments. Considering biopolitics through the various and diverse ways of observing a fetal ultrasound lends itself to common debates in the field of feminist science and technology studies. One discussion revolves around reproductive

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[13] Foucault, Michel. *The Birth of Biopolitics: Lectures at the Collège de France*, 1978-1979 . Edited by Michel Senellart. Translated by Graham Burchell (New York: Palgrave MacMillan, 2008), ISBN: 978-1403986542

[14] Foucault's writing on power, discipline and biopolitics inform my argument that fetal ultrasounds are a new vehicle for state power over physical bodies. Michel Foucault's theories have been applied differently by scholars to feminist theorizations of reproductive technologies. I employ his writing on biopolitics and disciplinary practices to hypothesize on how fetal ultrasounds still function in ways given its hybridity as a biopolitical technology. In other words, how are fetal ultrasounds capable of both furthering maternal well-being and health while also constituting an emotional dimension to a scientific document that, in turn, subordinates a pregnant individual?

technologies' oppressive and liberating qualities. Fetal ultrasounds, and ultrasounds in general, evaluate problems and help confirm diagnoses. For example, transvaginal ultrasounds are used to assess any abnormal lumps in the lower abdominal area. But because of the discursive practices revolving around a life and a fetus in American politics, fetal ultrasound viewership must be considered through legislation, discourse, gender, and race. When it is, we confront alternative narratives to both the liberatory and oppressive use of fetal controlling devices and reproductive technology.

As I began this dissertation, there ensued a race amongst multiple COVID-19 vaccines for emergency FDA approval. Like many vaccines, COVID-19 vaccines are criticized for their use of fetal embryo fibroblast cells, which are needed to make efficient vaccines for humans. Anti-abortion and anti-vaccine activists in the US have opted-out of the vaccines because of their use of fetal cells. Many of the activists falsely claim the vaccines have fetal cells present. Fetal cells, sometimes known as fetal tissue, are used to grow viruses. Following two terminated pregnancies in the 1960s, two different genetic lines of fetal cells were isolated and used to grow viruses. Today, these two fetal cell lines develop viruses. As the virus grows, cells die. At the end of the process no cellular DNA is present in the vaccine. But many in the anti-vaccine movement say otherwise. One Instagram post by *sista.anarchista* includes how one can legally decline a vaccine. For step two, the user states, "Ask the doctor, 'Does the vaccine have MRC-5 in it?' (THEY ALL DO) These are aborted fetal cells and other DNA. If the vaccine contains MRC-5 you have the RIGHT to decline."[15]

[15] *Sistah.Anarchista.* "My body, my choice! Self ownership people!" *Instagram*, November 26, 2020, https://www.instagram.com/p/CIFLKaYAWPh/. Accessed March 1, 2022.

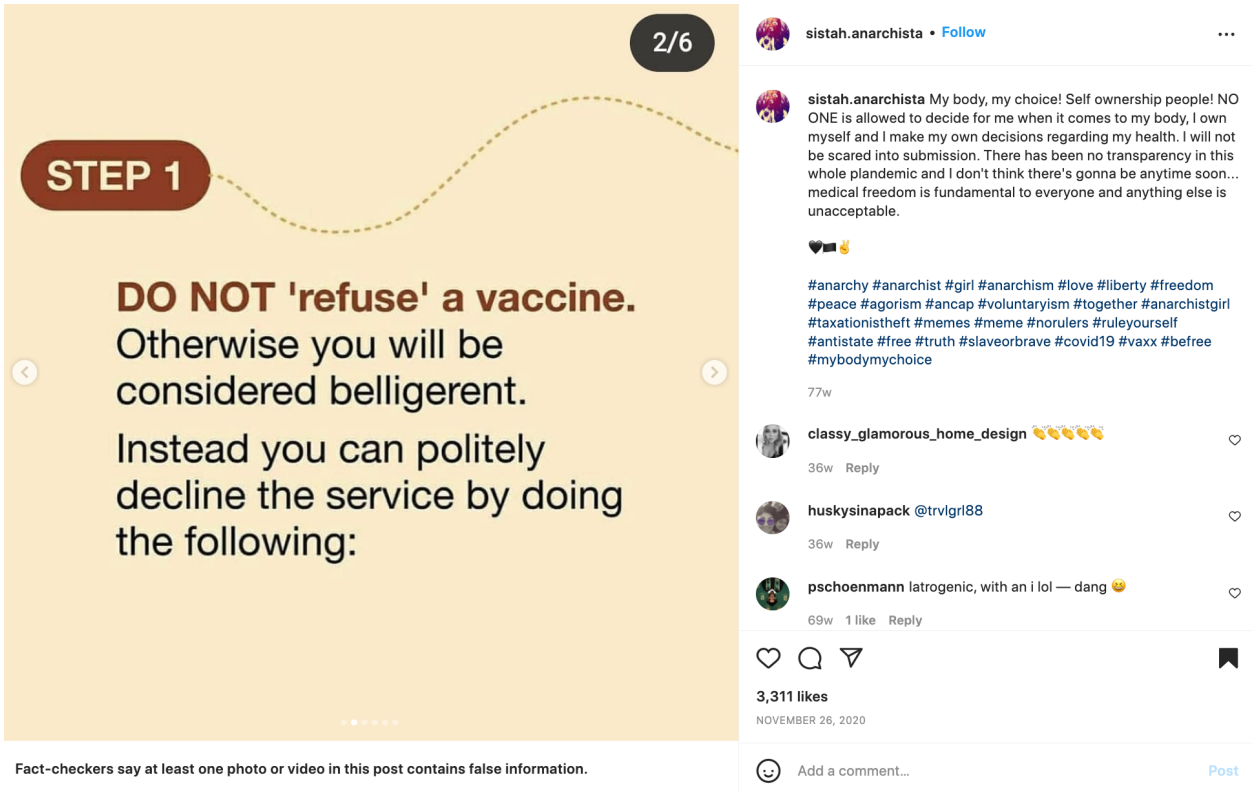

Figure 1: *Sistah.Anarchista* on Instagram: November 26, 2020

What strikes me most is the threading of anti-abortion and pro-choice discourse in the responses to *sista.anarchista*'s post. They write,

> "My body, my choice! Self ownership people! NO ONE is allowed to decide for me when it comes to my body, I own myself and I make my own decisions regarding my health. I will not be scared into submission. There has been no transparency in this whole pandemic and I don't think there's gonna be anytime soon...medical freedom is fundamental to everyone and anything else is unacceptable."

It is difficult to assess whether *sista.anarchista* is taking advantage of anti-abortion sentiments for bodily autonomy or if the user is actually made uncomfortable by fetal embryo fibroblast cells used in vaccine development. Either way, this Instagram post illuminates the paradoxical ways anti-abortion and pro-bodily autonomy discourses coexist- in the anti-vaccine community.

This particular discourse is intriguing as it departs from other anti-abortion arguments that are less anti-science. For example, with the scientific induction of fetal ultrasounds, many anti-abortion movements began to strengthen their sentiments through their proximity to the medical profession and ultrasonic technology that provided a 'window' into the womb.

Two speeches evidence the anti-abortion movements that began to situate themselves closer to science at the 2020 Republican National Convention. On night three of the 2020 Republican National Convention Sister Dede Byrne's attempts to strengthen her anti-abortion speech by citing her previous work and current status as a medical professional.

> "And while we tend to think of the marginalized as living beyond our borders, the truth is the largest marginalized group in the world can be found here in the United States. They are the unborn. As Christians, we first met Jesus as a stirring embryo in the womb of an unwed mother and saw him born nine months later in the poverty of the cave. It is no coincidence that Jesus stood up for what was just and was ultimately crucified because what he said was not politically correct or fashionable. As followers of Christ, we are called to stand up for life against the politically correct or fashionable of today. We must fight against a legislative agenda that supports and even celebrates destroying life in the womb. Keep in mind, the laws we create define how we see our humanity. We must ask ourselves: What we are saying when we go into a womb and snuff out an innocent, powerless, voiceless life? As a physician, I can say without hesitation: Life begins at conception."[16]

On night two of the 2020 Republican National Convention, Abby Johnson, a self-proclaimed "pro-life" activist who spent eight years working for Planned Parenthood, speaks about watching abortions through fetal ultrasounds. She discusses the racist founder of Planned Parenthood, Margaret Sanger, an avid eugenicist. Johnson's description of Sanger is correct, but I am more interested in her description to a national

[16] A full transcript can be found on *Catholic News Agency.* https://www.catholicnewsagency.com/news/full-text-sister-dede-byrnes-speech-at-the-2020-republican-national-convention-71435.

audience of an abortion she watched via a fetal ultrasound.

> "But the tipping point came a month later when a physician asked me to assist with an ultrasound guided abortion. Nothing prepared me for what I saw on the screen. An unborn baby fighting back desperate to move away from the suction. And, i'll never forget what the doctor said next 'beam me up scotty'. The last thing I saw was a spine twirling around in the mother's womb before succumbing to the force of the suction...For most people who consider themselves pro-life abortion is abstract. They can't even conceive of the barbarity. They don't know about the products of conception room in abortion clinics where infant corpses are pieced back together to ensure nothing remains in the mother's womb.See for me, abortion is real. I know what it sounds like, I know what abortion smells like. Did you know abortion even had a smell…"[17]

Even if we were to assume Abby's description of abortion is accurate, which I do not suggest, the cruelty with which she frames abortion is contingent upon her objective approach to the ultrasound screen, which is a visual representation of data. She essentially purports to have watched a cold and disturbing death through an abstraction while arguing that, for most folks, abortion is itself an abstract concept. Moreover, this computational rendering of sonic data is accepted in popular culture as an objective window, and this acceptance lingers deeply in spaces trying to limit reproductive rights.

As I argue in chapter one, a fundamental reason why this is accepted is because of an ultrasound's hybrid affective-diagnostic capability. Moreover, it is capable of medical diagnosis and assessment whilst also functioning as a social tool that fosters notions of love, separation, regret, excitement, and fetal personhood. I consider the history of ultrasonography through moments of transition using specific examples from echolocation research, militarism, obstetrics and gynecology, and magazine spreads, to illustrate the tool's trajectory from biopolitical to hybrid diagnostic-affective. I analyze discourses surrounding and reception to diverse fetal

[17] *NBC News*. "Abby Johnson Discusses Why She Left Planned Parenthood At The 2020 RNC | NBC News". "Aug 25, 2020. https://www.youtube.com/watch?v=NXQjCuWFdzI.

imagery, arguing that the attachment of certain feelings, emotions, fantasies, narratives, and ideas to visualizations of fetuses has ramifications for the ways we think about life and its origin. Western science's interest in visibility prepared viewers for the dissemination of fetal images that were previously unavailable.[18] I conclude my argument by insisting ultrasounds are not only medical tools for reproductive assessment but also a material-discursive apparatus with real potent consequences for people's bodies and lives that inform collective ideas of what it means to be a mother, to be pregnant, and to be a fetus.[19]

In chapter two, looking specifically at YouTube, I present how collective ideas of fetal personhood and pregnancy are co-produced by users and commenters on social media platforms. I argue that fetal ultrasounds on YouTube are often frequently not located directly in the political debate over the right to choose but, with their affective-diagnostic register, are aligned with anti-abortion discourse.[20] I cite evidence from YouTube videos ranging in genre and format, closely analyzing them for framing, language, and engagement to exhibit how they subordinate pregnant individuals through claims of authority and insinuations of legitimacy. While engaging in critical digital studies and social media studies, I argue that fetal ultrasounds on *YouTube* contribute to our cultural understanding of a fetus through the treatment of the fetus as a spectacle.

In chapter three, I consider fetuses through at-home non-medical fetal dopplers, a

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[18] This is discussed by Lisa Cartwright in *Screening the Body* in terms of cinema's emergence being conceived through the decades of nineteenth-century Western science's "fascination with visibility," 7.

[19] Paraphrasing from Janelle S. Taylor. *The Public Life of the Fetal Sonogram: Technology, Consumption, and the Politics of Reproduction*. Rutgers Univ. Press, 2008, 3.

[20] YouTube is a video sharing and social media platform founded in 2005 and bought by Google in 2006.

monitoring device that uses ultrasound but does not provide a visual image. Through the broadcasted use of these devices by users on YouTube, I argue that fetuses continue to be highlighted despite the absence of a visual spectacle. But, without the visual spectacle, a content maker is visually centered, an empowering gesture that is particularly interesting for pregnant people of color. Through the doppler, Black pregnant people and pregnant people of color circumvent medical settings that traditionally failed them. They are also publicly self-presenting as "proper" maternal figures through prenatal care and caution. While this opportunity to broadcast prenatal care opposes pathological stereotypes that have been fundamental in the criminalization of pregnant people of color, content creators engage with this diagnostic technology through affective language strengthening maternal-conflict tied to a larger history of racist reproductive control. Therefore, chapter three reads fetal dopplers through the biopolitical history of Black visibility and invisibility, maternal-fetal conflict, and discourses of care with historical lineages to 1662 Partus Sequitur Ventrem, the 1986 War on Drugs, 1990's criminalization of pregnant Black women, and modern fetal heartbeat legislation.

This dissertation's primary case studies focus on the United States, with its uniquely complicated relationship with bodily autonomy and abortion. There are some case studies, like the first in chapter one, from outside of the United States. This particular case study is included to more broadly present introductory discourses surrounding fetuses and ultrasounds in popular culture. I determine this national scope to sharpen my critique of a complex discursive and legislative field. To describe parts of this complex discursive and legislative context, I utilize terminology that I must specifically define. Although I mainly use the term pregnant individuals, there are moments where I mention pregnant mothers or pregnant women. This is not to exclude

any one type of person but instead to specify an issue that has most often been historically attributed to or impacted women. I want to clarify that mothering/maternity, as I apply it despite its gendered etymology, is a gesture that can be provided and performed by any gender and any sex. Lastly, this dissertation is tremendously concerned with what I call fetal rhetoric. I use this as a broad term to reflect the discourses surrounding fetuses in society, politics, legislation, or any movement (pro-choice or anti-abortion).

Chapter 1: The Ultrasound as a Diagnostic and Affective Tool

On October 23, 2012, Katyia Rowe from Shropshire England, gave birth to a baby who would only live nine hours. Physicians advised her during her pregnancy to abort her fetus whose brain hadn't developed properly. If the fetus, which Rowe had already named Lucian, survived birth, he would be unable to walk or talk and be subject to twenty-four-hour care. An ultrasound was performed on her in the twentieth week of her pregnancy. Rowe was convinced to continue the pregnancy sfter believing she saw the fetus 'smiling' in a 3D scanned image. Rowe's tragic story was sensationalized in various online tabloids, the most notable being the *Daily Mail*.[21] In an interview with *The Daily Mail*, a right-wing British newspaper known for its inaccuracies and plagiarism, Rowe states, "Further scans were arranged to asses *[sic]* the extent of his disabilities but when I saw him smiling and playing inside me I knew I couldn't end his life."[22]

[21] I am not claiming *The Daily Mail* as a credible source but rather as an popular online instance of sensationalism. My citation of *The Daily Mail* is included to help frame how online spaces engage in fetal discourse.

[22] Larisa Brown, "The 3D scan of a disabled baby's smile that convinced his mother not to abort him- and why she is grateful she was able to cuddle him with joy for a few precious hours", *The Daily Mail*, January 14, 2013. Accessed October 29, 2021.

Figure 2: *"*The 3D scan of a disabled baby's smile that convinced his mother not to abort him- and why she is grateful she was able to cuddle him with joy for a few precious hours", *The Daily Mail*, January 14, 2013.

The short, sensationalized piece finalizes Rowe's tragic narrative with a harmonious resolution. Rowe was justified in her decision, grateful that Lucian "held on long enough for us to meet properly."[23] *The Daily Mail* produces a narrative wherein a routine medical assessment of fetal diagnosis naturally bonds a mother and her fetus. They endure a tumultuous journey together, resolving in their final goodbye. The narrative is strengthened by suggestive photos resembling the memorializing of a deceased family member. An analysis of the images of Rowe and her husband uncovers a frequent emphasis on notions of family, child, life, and protection. As I will argue later in the chapter, an obstetrical (or scientific record) often turns into an emotional family photo upon its public viewing.

Additionally, as my case studies unveil, if a fetus can present typical characteristics, like 'smiling,' 'playing,' and 'sucking' its thumb in the womb, then it is a baby that is both gendered and worth protecting. In one photo, Rowe holds a framed photo of the 3D scan of her fetus that convinced her not to abort Lucian. For Rowe, the framed image represents a 'baby,' specifically a 'son,' that deserved to live. The powerful sense that Lucian 'deserved' protection only came after Rowe was able to see her fetus through ultrasonography. She describes loving to watch "him" 'kicking,' 'playing,' 'blowing bubbles' and 'smiling,' and that if "he" could do all of those things, he deserved a chance at life.[24] In another photo, she and her husband stand hand in hand in a room decorated for Lucian. Lucian was anticipated and imagined despite the fetus' life-threatening complications.

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[23] Ibid.

[24] Ibid. 'He' is in quotations as this is the terminology Rowe uses to reference her fetus, not one that I inscribed onto her fetus.

Both photos included in the tabloid piece work together to portray a profound sense of loss while constructing a person out of viewing a scan of a fetus. How exactly does one *see* a fetus from the technological rendering that captures sound wave data and translates it into an image? Sound waves bounce off tissue in the womb. The reflected waves are received by a sensor and translated into computer data. That data is computed into a visual representation of the fetus. Therefore, this visual image is a computational rendering of sonic data, not an indexically captured image of the fetus like film photography would produce. Despite this, the sound-generated image is somewhat naively regarded with the same authority as a photographic image in contemporary society. Moreover, obstetric machinery doesn't only produce vital medical records but also visually dramatic images. It is only because of the ability to process data into images, and its ability to not be seen as such that we get to a place where one sees, feels, and inscribes gender, personhood, connection, and legal protection onto fetuses.

Figure 3: "The 3D scan of a disabled baby's smile that convinced his mother not to abort him- and why she is grateful she was able to cuddle him with joy for a few precious hours", *The Daily Mail*, January 14, 2013.

I mobilize a history of ultrasound to investigate how the tool simultaneously aids in medical assessments and mediates affect. I ask, how are ultrasounds a hybrid diagnostic-affective apparatus capable of medical diagnosis and evaluation while also functioning as a social tool assisting in fostering notions of love, separation, regret, and excitement. These intimate emotional feelings and bonds tightly connect to my definition of the diagnostic-affective. I have coined this term to encompass an ultrasound's hybridity both as a biopolitical technology capable

of furthering parental well-being, monitoring fetal health, and organizing various understandings of life and a social technology encouraging emotional dimensions to a scientific document. This term is productive for my material-discursive argument. It juxtaposes science and affect in ultrasounds to emphasize how these two function together to develop collective notions of life and its origin. I consider the history of ultrasonography through moments of transition using specific examples from echolocation research, militarism, obstetrics and gynecology, and magazine spreads, to illustrate the tool's trajectory from biopolitical to hybrid diagnostic-affective.

I begin my argument by looking at the history of the ultrasound concerning the military-industrial complex going back to a long history of echolocation to prepare us for the eventual affective use of ultrasonography. The movement of ultrasonography from the United States military into medical diagnostics in the 1970s is dependent upon the tool's relationship with visibility. A brief explanation of Bat echolocation assists in situating ultrasonography's complex relationship with life and death serving as a conduit to my discussion of the military-industrial complex. Within the analysis of ultrasound in the military is a technological explanation of sonography. I explain how ultrasonography produces images through sound pressure waves that enter and echo back to a transducer and then to a computer screen. I do so to highlight its application in medicine and its complex relationship with photography. Obstetrical and gynecological use of ultrasound did not become popularized till the 1980s. Fifteen years prior, visualizations of fetuses entered popular culture, impacting how fetuses were talked about and understood. Although it is an instance of fetal photography and not fetal ultrasonography, the popular reception of Lennard Nilsson's photo series in *LIFE* magazine's 1965 issue represents a

culminating moment where discourse attaches feeling, emotions, fantasies, and ideals to fetal imagery. This issue inevitably contributes to how we think about protected life and when it begins.

Ultrasound formed part of the military-industrial complex from the 1910s to the 1930s. After decades of research and testing, ultrasounds were used in the medical sciences in the 1970s. Medical professionals would use the tool to visualize fetuses in reproductive medicine, assisting them in controlling birthing methods, assessing risks, and diagnosing abnormalities. The tool's repurposing by the medical-industrial complex coincided with its ability to produce images turning it into a new visualizing mechanism. Analog photography and Western science's interest in visibility prepared viewers for the dissemination of sound-generated images that was previously unavailable. These new, unfamiliar and yet familiar images reflect a return to the analog take-home photo and their utilizing as such in and outside of medicine. At the end of this chapter, I examine their affective potential expanding from Jennifer Denbow's argument that fetal ultrasounds are happy objects [25] as they are ascribed and felt as *good*.[26] Through an interpretation of ultrasounds, viewers claim to see indicators of excitement in a fetus.

Moreover, Ultrasounds are a crucial part of this visual interpretation. Not only do they contextualize these interpretations, but they manage emotional connectivity to obstetric sonography and other representations of fetuses. This orientation directly relates to biopolitical

[25] Coined by Sara Ahmed in "Happy Objects," in *The Affect Theory Reader,* eds. Melissa Gregg and Gregory J. Seigworth (Durham, NC: Duke University Press, 2010). Julie Roberts in *The Visualized Foetus: A Cultural and Political Analysis of Ultrasound Imagery* (London; Routledge, 2012) considers the ultrasound images as "semiotic objects," 9.

[26] Jennifer Denbow, "Good Mothering before Birth: Measuring Attachment and Ultrasound as an Affective Technology," 4.

questions like who is worthy of life and who is worthy of personhood? Obstetric sonography provides a space for a fetus's visual representation, which is not strictly for diagnosis or assessment but rather, to project and confirm one's own belief systems. I conclude my argument by insisting ultrasounds are not only medical tools for reproductive assessment but also a material-discursive apparatus with real, potent consequences for people, bodies, and lives, informing collective ideas of what a fetus is and deserves.

Ultrasound technology, also known as ultrasonography and diagnostic sonography, is a medical technique used for therapeutic application and diagnostic medical imaging. In real-time, ultrasounds visualize internal components of the human body through sound waves or ultrasounds. I will explain the technological elements and mechanics of ultrasound as it explains why the tool is anatomically applied in medicine and commonly used to visualize internal organs.

The ultrasound probe or transducer, placed on the skin and sometimes in the body, produces and detects high-frequency sound waves. It does so through piezoelectrics, which are crystals that vibrate to create sound waves and turn electric currents into ultrasound waves. The high-frequency sound pressure waves enter the body and reflect off of fluid and soft tissues back to the transducer. Once these high-frequency sound pressure waves echo back to piezoelectric crystals in the transducer, the returning echoes turn into electric signals and, in turn, different brightness levels on the computer screen. The medical implementation of ultrasounds lies within three categories: anatomical, referring to the visualization of internal organs; functional, the production of maps assessing changes to structures and organs; and therapeutic, the process of

interacting with and modifying tissues.[27] Of interest in this dissertation is the anatomical application of ultrasounds in obstetrics. Obstetric sonography is the application of ultrasound to visualize a fetus or embryo during prenatal care.[28] But obstetric sonography and other visual representations of the fetus did not emerge purely in and continue to operate outside of the medical field. I argue that ultrasounds started as, and still are, a biopolitical tool. It was an instrument for warfare reconfigured into a hybrid tool. This hybridized iteration of the ultrasound still functions in ways that are complicated by the emotional dimension to the scientific documents ultrasounds produce. There is the emotional connectivity to obstetric sonography, and other representations of the fetus, that directly relate to the more violent aspects of the technology's application. Specifically, the intimate connections to life and its visual representation "sustains or preserves the connection" between the biopolitical and ultrasonography.[29] Obstetric sonography[30] observes, organizes, and disciplines life through two avenues: a fetus and a pregnant person. It is fundamentally a device that influences the various stages of a life, which precipitates emotional interactions with the device.

Echolocation is the emission of sounds, usually high frequencies, to locate objects in an environment by assessing the echoes that have reflected off objects in the environment.[31] This

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[27] I obtained this information from the National Institute of Biomedical Imaging and Bioengineering https://www.nibib.nih.gov/science-education/science-topics/ultrasound.

[28] Ibid.

[29] Sara Ahmed, "Happy Objects," in *The Affect Theory Reader,* eds. Melissa Gregg and Gregory J. Seigworth (Durham, NC: Duke University Press, 2010), 29.

[30] Obstetric sonography is the visualizing of a fetus or embryo through echolocation during prenatal care for the purpose of monitoring the development of a fetus.

[31] The term was coined by Donald Griffin, a Professor of Zoology, in 1944 after extensively researching bat flight.

dynamic is a fundamental component of ultrasounds that precedes the human species. Also known as biosonar, echolocation is an evolved trait used by animals to assist in navigating their environment and foraging for food.[32] Some of the most well-known animals capable of evolved echolocation include whales, dolphins, and bats. Although not an evolved trait, humans are capable of learned and intuitive echolocation through acoustic clues such as tongue clicks, cane taps, and whistles.[33] In the 1940s and 1950s a laboratory at Cornell University researched people with visual impairments' processing of echoes, establishing the existence of echolocation.[34] With attention to the significant gaps in the under-researched area of human echolocation, Cooper S, Velazco PM, Schantz H in "Navigating in Darkness: Human Echolocation with Comments on Bat Echolocation," demonstrate minor similarities in bat echolocation, a heavily researched area, and human echolocation, an under-researched area. While they caution against making too many connections between the two species' ability to echolocate, the researchers do mention head movement and brain registration of outgoing signals as two connecting features.[35] While the intersection of bat echolocation and human echolocation is under-studied, bat echolocation research is an interesting case study of evolved sonar systems that connect to the early history of

[32] I specify "assist" as there is a misconception that bats fly without vision. In fact, according to Cooper S, Velazco PM, Schantz H in *Navigating in Darkness: Human Echolocation with Comments on Bat Echolocation*, 88% of bats use echolocation while 14% use their eyes. See p. 39 of their piece.

[33] Cooper S, Velazco PM, Schantz H (2020). *Navigating in Darkness: Human Echolocation with Comments on Bat Echolocation*, 36.

[34] Ibid., 36-41.

[35] Ibid., 36, 40.

echolocation as early experimentation on bats by the Italian biologist Lazzaro Spallanzani would inspire preventative obstacle location research following the sinking of the *Titanic*.[36]

From Echolocation Research to Submerged Object Research

A short genealogy of sound navigation research in a living organism presupposes how ultrasound comes to impact human bodies and conceptions of life in the 20th and 21st centuries. Though a brief deviation from ultrasonography, a study of bat echolocation is necessary to establish how the process of echolocation, a fundamental component of ultrasonography, eventually necessitates the application of ultrasonography in submarine warfare. Of particular interest is the violence in the human study of bat echolocation and how ultrasounds, as a biopolitical technology, also similarly function in powerful and threatening ways.

The first written experiments with bats were by Lazzaro Spallanzani in the 1700s. Through extensive experiments deploying ethically questionable methods, Spallanzani captured and blinded bats observing they were still able to fly. With this realization, he decided to impair other sensory functions. He, and other researchers at the time, eventually and independently concluded that bat ears were connected to how bats directed themselves. The specific mechanisms by which bats were able to fly with the assistance of their ears were still unknown to Spallanzani at the time of his death.[37] He was not alone in this assertion. Other researchers like

[36] Dalen, Albert van. *The Use of Ultrasounds in Military Traumatology.* Central Military Hospital & University Hospital Utrecht. 35-1. Albert van Dalen makes the connection I consider within the history of ultrasound linking it back to bat echolocation research and the Titanic.

[37] Galambos, Robert. *The Avoidance of Obstacles by Flying Bats: Spallanzani's Ideas (1794) and Later Theories.* Isis, Autumn, 1942, Vol. 34, No. 2 (Autumn, 1942). Pp. 132-140. The University of Chicago Press on behalf of The History of Science Society.

Raymond Rollinat, Edouard-Louis Trousessart, and W.L. Hahn similarly concluded that flying bats used their ears for direction, continuing to research and publish on the topic.

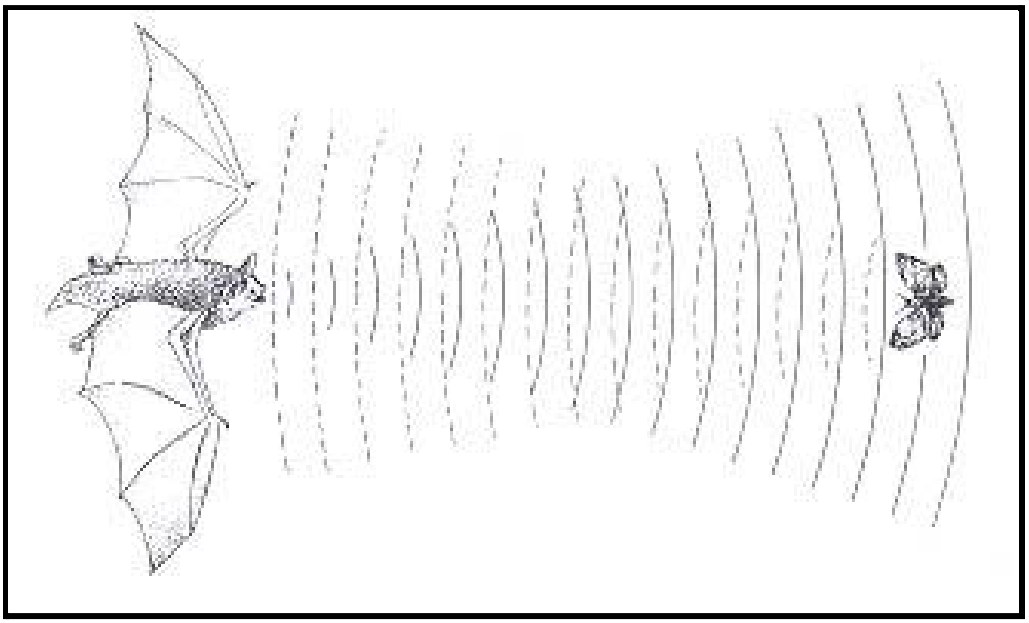

Figure 4: The Natural History Collection at The University of Edinburgh

Rollinat, Trousessart, and Hahn expanded Spallanzani's work. Spallanzani's work was also revisited in the 20th century by Sir Hiram Maxim following the sinking of the *Titanic.* This revisiting threaded it to more contemporary utilization of ultrasonography and themes of human life and death. According to Robert Galambos in *The Avoidance of Obstacles by Flying Bats: Spallanzani's Ideas (1794) and Later Theories,*

> "...when the *Titanic* sank in 1912 after striking an iceberg, Sir Hiram Maxim turned to the old Spallanzani experiments on the bat 'sixth sense' in an attempt to devise a system by which ships at sea could locate obstacles in foggy weather. He was convinced Spallanzani had shown that bats detect obstacles by perceiving echoes caused by the air set in motion by the bat's wings, and in an interesting popular account he proposed to equip sea-going vessels with devices directed toward the same end. Each ship was to carry a generator of low frequency sound (14-15 cycles per second); sound emitted by this generator would be reflected by objects in the sea and return to one or more sensitive mechanical 'ears' placed at strategic points on the ship. These ears would be connected to

> a series of bells in such a way that a faint echo (indicating a distant object) would ring a small bell while a loud echo (near object) would ring a large bell."[38]

This early case study proves the initial introduction and innovation of ultrasonography had no relationship to the imaging of anatomic pictures of the human body. The application of Spallanzani's experiments to human-designed mechanisms for ship safety would strengthen the relationship between what once was purely natural, animal echolocation and human-driven innovation. Within the context of this study, what is significant is the appropriation of echolocation to presumably avoid future accidents, and therefore human death, tying it to contemporary iterations of preventative ultrasonography in fetal development.

While Maxim's proposal sounds like a method for detecting icebergs, it would eventually be French Physicist Paul Langevin, who was popularly cited as the inventor of the new way to detect icebergs. In 1914, he would come to develop a "hydrophone" device, the first receiver to detect echoes from submerged objects. The receiver becomes known as a breakthrough in ultrasonography, especially due to its use of piezoelectric materials, the crystals that vibrate to create sound waves and turn electric currents into ultrasound waves. Piezoelectricity, discovered in 1877 by Pierre Curie, a French physicist, would become a fundamental part of an ultrasound's visualization ability.

In an ultrasound, high-frequency sound pressure waves echo back to piezoelectric crystals in the transducer. The returning echoes become electric signals and, in turn, different brightness levels ona computer screen. In *Meeting the Universe Halfway*, feminist theorist Karen Barad explains the mechanics of the piezoelectric transducer using it as a case study for working through her philosophical framework called agential realism - a framework that considers how

[38] Galambos, 139.

the world is discursively and materially configured and reconfigured through intra-actions which are also entanglements but of 'things' without inherent agency[39]. She defines "the piezoelectric effect" as capable of both receiving and transmitting. "When pressure is applied to opposite faces of a piezoelectric crystal, it emits an electrical signal that can be amplified and displayed visually...if an electric signal is applied to the crystal, it will expand or contract depending upon the polarity of the signal. High frequency oscillating signals cause the crystal to vibrate, resulting in the propagation of ultrasound waves."[40] As she argues, this dual capacity makes the material instrument a profound tool for thinking through discourse and apparatus. In my genealogy of the ultrasound, Barad's "piezoelectric effect" is affirmed. As evidenced by its application following World War II in submarine warfare, ultrasonography is both a material instrument entangled in war and a vehicle for constructing hierarchical values of life.

Ultrasonography's Lineage

As I have argued, fetal ultrasonography has a discursive impact on the ways society frames, thinks through and talks about reproducing bodies and fetuses. This impact is made clear by ultrasonography's lineage, specifically the use of ultrasonography in the military-industrial complex. Its military application contributed to how the tool, and its future iterations in the decades to follow, were directed towards bodies and populations. From submarine warfare to early biomedical imaging and eventually, to reproductive medicine, the genealogy of

[39] Barad, Karen. "Getting Real: Technoscientific Practices and the Materialization of Reality." In *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, 141, 205-206.

[40] Ibid., 87.

ultrasonography had and continues to directly impact the control and creation of productive bodies.

By the end of the First World War, the French Navy was already experimenting with the use of ultrasonography to search for submerged objects.[41] Once World War II began, the United States Navy Institutions would detect submerged obstacles or submarines with their Sound Navigation and Ranging System. Of specific significance to warfare efforts was the use of high-frequency ultrasounds to detect flaws in metal.[42] Following this particular application of ultrasonography during World War II, the US government became more invested in funding the use of ultrasound as a tool with higher diagnostic value granting money to the development of more lightweight ultrasound devices.[43] Moreover, before ultrasound's diagnostic modality, it was cemented to wartime innovation. Even as it transitioned into what we know the technology to be now, its earliest diagnostic use was materially connected to warfare. As Albert van Dalen states in *The Use of Ultrasounds in Military Traumatology*, "The first examinations of patients were performed in a tank with the patient up to his neck immersed in water and an underwater rotating transducer. This construction was for example shown in the 'gun turret scanner' (1954), constructed with materials from a B29 bomber aeroplane". Through the materiality of a diagnostic assessment inside what was once a B29 bomber aeroplane, I construct a more

[41] Wladimiroff, Juri W., and Sturla H. Eik-Nes. *Ultrasound in Obstetrics and Gynaecology*. Edinburgh et al.: Elsevier, 2009, 3.

[42] Ibid., 3. According to Juri W. Wladimiroff and Sturla Eik-Nes, "The metal flaw detectors became increasingly important as World War II was approaching, but were reported after the war". Also from page 3.

[43] Dalen, Albert van. *The Use of Ultrasounds in Military Traumatology.* Central Military Hospital & University Hospital Utrecht. 35-1.

complicated picture of ultrasonography arguing that the early and innovative history of biomedical imaging is inseparable from war efforts born from US Imperialism.

In *Attachments to War: Biomedical Logics and Violence in Twenty-First-Century America* (2017), Jennifer Terry solidifies the connection between biomedicine and war. In her book, she argues that biomedicine and its constructed logic, often neoliberal ideals, have contributed to the rationalization of war. She states, "Biomedicine can serve to make excuses for violence, whether these excuses come in the form of knowledge that can be acquired through research on wounds and diseases or in the form of claiming that war can be carried out in efficient targeting in which only the blameful will be violated."[44] Therefore, biomedicine, as she argues, does not only have its logic about freedom and democracy but also its promises about care and healing. The same promises and logics are uniquely evident in the historical construction of the ultrasound, as evidenced by the technology's transforming use from militaristic to diagnostic to hybrid diagnostic-affective. The transition was neither clean nor clear-cut. Each of these reconfigurations still exists within the technology. In other words, when the ultrasound became a much more diagnostic instrument, it was still tied to US militarism, specifically through its determination of which lives are more important than others.[45]

While ultrasounds were used in obstetrics in the 1950s, they were not integral to the field until the 1970s.[46] In "Early History of Diagnostic Ultrasound: The Role of American

[44] Jennifer Terry, *Attachments to War: Biomedical Logics and Violence in Twenty-First-Century America*, 3.

[45] I further elaborate on this argument in chapter three through the case study of portable non-medical fetal dopplers.

[46] On p. 201 of her chapter titled, "Getting Real: Technoscientific Practices and the Materialization of Reality," Karen Barad states "Obstetric applications of ultrasound technology occurred in the late 1950s. By the mid- 1960s, obstetric ultrasound gained wide acceptance in the medical community. A decade later, ultrasound was regarded as integral to the practice of obstetrics". Another scholar who cites this decade is Lauren Berlant on p. 172 of the Duke University Press journal edition of "America, 'Fat', the Fetus".

Radiologists," Goldberg, Gramiak, and Freimanis state, "It was not until the 1970s, when researchers began to use the fontanelle in pediatric patients for placement of the transducer, that adequate information from two-dimensional imaging became available".[47] According to historians Goldberg, Gramiak, and Freimanis, the development of ultrasounds for medical diagnoses began after World War II, thanks to a handful of enthusiasts who saw the potential clinical applications of this technology. Some of these enthusiasts happened to be radiologists like Douglas Howry. He left a formal residency program to pursue ultrasound research with the ultimate goal of creating anatomic pictures with the technology. And he would do just that. "In 1949, Howry and coworkers used surplus radio and Air Force radar parts to build a pulse-echo ultrasonic scanner capable of two-dimensional images".[48] Two years later, Howry and engineers, Bliss and Posakony created an ultrasound scanner constructed with an immersion tank made out of a cattle-watering container. Another two years later, Howry would develop an updated version attaching a transducer to a B-29 gun turret, known as the 'gun turret scanner' (1954). The gun turret scanner is just one helpful way to consider the transition from ultrasounds in submarine warfare to the diagnostic use of ultrasounds on patients. It is not the only example that exists but it helps scale the historical change I, and other scholars like Albert van Dalen, observe.

Ultrasound development and research in the 1950s centered on a water-bath system of immersing a patient for long periods of time to be scanned. In these early stages of ultrasound technology, the patient would sit in the watering container while the transducer would rotate around them on a B-29 gun turret. This proved difficult for patients during clinical use. And so,

[47] Goldberg, Barry B, Raymond Gramiak, and Atis K Freimanis. "Early History of Diagnostic Ultrasounds: The Role of American Radiologists." *American Journal of Roentgenology* 160 (1993), p. 192.

[48] Ibid., 189.

in the late 1950s and into the 1960s other iterations of the ultrasound were developed, formally driving the tool's transition into reproductive medicine. The medical use of ultrasonography in reproductive medicine became increasingly routine as ultrasound technology was capable of rendering better images of internal organs. With this, ultrasounds became a fundamental part of biomedicine in the United States, screening and assessing the early stages of pregnancy.

From General Imaging to Obstetrics and Gynecology

In 1958, Scottish physician Ian Donald would use his World War II-era Air Force knowledge to prototype a machine that would use pulsed ultrasound to visualize abdominal masses.[49] [50] His work, "The Investigation of Abdominal Masses by Pulsed Ultrasound," was considered the beginning of ultrasound in Obstetrics and Gynaecology.[51] In the introduction to his journal article, "A Short History of Sonography in Obstetrics and Gynaecology," Professor of Obstetrics and Gynaecology Stuart Campbell states,

> "It is often difficult to know when most developments in medicine actually begin. They tend to evolve and many people will claim the credit of being the first to make the breakthrough. With Ultrasound in Obstetrics and Gynaecology there is no such doubt for it had a very definite beginning with the 1958 classic Lancet paper (Donald et al., 1958) by Ian Donald, John McVicar, and Tom Brown "The investigation of abdominal masses by pulsed ultrasound". Actually this is an unfortunate title because it does not identify what was truly unique about the paper which is that it was entirely devoted to ultrasound studies in clinical obstetrics and gynaecology and contained the first ultrasound images of the fetus and also gynaecological masses. The other unique feature was that these were

[49] Wladimiroff, Juri W., and Sturla H. Eik-Nes, 3.

[50] According to research by Goldberg, Barry B, Raymond Gramiak, and Atis K Freimanis, in the 1960's, engineers William Wright and Edward Meyer collaborated and developed a direct contact scanner, 191.

[51] Wladimiroff, Juri W., and Sturla H. Eik-Nes, in *Ultrasound in Obstetrics and Gynaecology*. Edinburgh et al.: Elsevier, 2009, and Campbell, S in "A short history of sonography in obstetrics and gynaecology." *Facts, views & vision in ObGyn* vol. 5,3 (2013): 213-29 cite the influence of Dr. Ian Donald in the clinical development of ultrasound in ObGyn.

> the first images taken with a compound contact scanner which was the first practical scanning machine." [52]

Campbell's detailed history maps out the development of ultrasounds in the fields of Obstetrics and Gynecology, citing the 1970s as the decade where equipment development would lead to real-time scanners and to the widespread use of ultrasounds for prenatal diagnosis. Many massive ultrasound companies produced real-time scanners advancing in sophistication every year. By 1983, there was a "new standard in both spatial and contrast resolution".[53] Between 1985 and 1990, practical endovaginal mechanical sector transducers were not only developed but manufactured to be smaller with increased resolution. In the 1990s, ultrasounds improved image resolution, becoming capable of color, and offering 3D/4D options. As Professor Stuart Campbell details,

> "Although early studies on 3D imaging were begun in Japan by Kazunon Baba in 1984, it was not until the production of the third generation 530D Voluson in the mid 1990's that the world was convinced that 3D/4D ultrasound had a major role to play in both obstetrical and gynaecological imaging. Much of the credit for promoting this new technology must go to Bernard Benoit a French doctor working in Nice who published stunning 3D images of the fetus especially in the first trimester. It could thus be said that (apart from a few refinements) the modern real time scanning machine with high resolution abdominal and endovaginal transducers, harmonic imaging, colour and power Doppler facilities with a 3D/4D option was on the market by the year 2000." [54]

Moreover, within the field of ObGyn (Obstetrics and Gynecology), ultrasonography took several decades and iterations to develop into the biomedical imaging technology it is today.

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[52] Campbell, S. "A short history of sonography in obstetrics and gynaecology." *Facts, views & vision in ObGyn* vol. 5, 3 (2013): 213-29.

[53] Ibid.

[54] Ibid.

Ultrasounds in ObGyn

In Obstetrics, the ultrasounds would become integral in assisting in, studying, and identifying fetal abnormalities, fetal cardiac defects, fetal chromosomal abnormalities, and invasive procedural options. And in Gynecology, the technology would become integral in screening, studying, and identifying early pregnancy disorders, pelvic masses, ovarian malignancy, and reserve. According to S. Campbell, 3D ultrasound imaging is still a 'work in progress,' with most practitioners reporting that 3D ultrasound imaging is seldom necessary. Even if not medically necessary, 3D ultrasound imaging has proven impactful. "Real Time 3D ultrasound imaging (i.e. 4D) is most useful in showing fetal movement and there is evidence that this has real benefits in improving maternal-fetal bonding."[55] The material-discursive component of fetal ultrasonography becomes very apparent with the deployment of 3D imaging and its encouragement not only of bonding but of fetal humanity and personhood. When fetal ultrasounds are considered through the material and the discursive I can unravel the binaries in fundamental debates within the field of feminist science and technology studies. The material refers to the technology's materiality situated in reproductive health with the capacity to visualize the unseeable, and the discursive, is the narratives and histories that accompany reproductive technologies, devices, and practices. Within this, binaries continue to provoke questions about the design and usefulness of technology in absolute terms-- i.e., are reproductive technologies and devices liberating or repressive? My material-discursive framework combines feminist science and technology studies with a material-discursive framework. This coupling borrows from feminist critiques of both technoscience and biopolitics, specifically the work of

[55] Ibid.

theorists Michelle Murphy, Judy Wajcman, Dorothy Roberts, Donna Haraway, Karen Barad, to name a few. The Foucauldian notion of biopolitics and disciplinary power is crucial to my material-discursive approach to fetal ultrasounds, and to reproductive-controlling technologies in general. Foucault and feminist critiques of Foucault display how biomedicine is a tool for biopolitics that promote logic entangling affect with politics. This biopolitical aspect of the now hybrid diagnostic-affective device leads to popular cultural texts such as the 1965 issue of *Life* magazine.

Biopolitics and Mechanized Observation

As evidenced by its military use, ultrasonography has been a biopolitical tool ideologically steeped in notions of life and protection. This biopolitical component became more disguised, but by no means did it disappear, with the development of ultrasonography in biomedicine, specifically obstetrics and gynecology. Biopolitical logic cements itself in biomedicine through the assumption of objective knowledge and the conflation of seeing and knowing through the visual medium. Therefore, my argument on vision, the biopolitical, and subject/object necessitates both the established work and criticisms of Michel Foucault. In an effort to highlight the idea that mechanized observation can also be steeped in ideology and comprised of normative narratives about the roles of women in society, I engage with feminist arguments regarding the biopolitical. Extending from the compelling work of other feminist scholars, I use Foucauldian biopolitics while re-centering women's bodies in the conversation of social control and technoscience.

Michel Foucault is often cited by feminist theorists since biopolitics often serves as a productive theory for thinking through reproductive technologies and population control. As defined by Foucault in *The Birth of Biopolitics* (1979), biopolitics is a method for governing a population through the management, ordering, and control of humans. This technology of power often uses scientific knowledge to ensure social control over the body. Feminist theorists have often criticized Foucault for bypassing the discussion of women and gender construction in his writings on sexuality. Moreover, the application of Foucauldian theory and analysis warrants an acknowledgment of instances where his views eliminate and bypass discussions of women literally and figuratively. With this in mind, many feminist scholars have engaged with Foucauldian theories, acknowledging its limitations while applying them to their writings on feminism.[56] Some approaches to feminism find Foucault's postmodern approach to body philosophy at odds with feminist efforts as it becomes increasingly difficult to effectively communicate grievances without the categorical binaries postmodernity attempts to eradicate. Political philosopher Monique Deveaux delineates two reasons against "uncritical appropriations of his *[Foucault's]* thought: the tendency of a Foucauldian conceptualization of the subject to erase women's specific experiences with power; and the inability of the agonistic model of power to account for much less articulate, processes of empowerment."[57] While acknowledging the limitations of Foucauldian theories, feminist theorists continue to employ his theories and fill in some of the many gaps as they write on biopolitics alongside gender and race. Karen Barad,

[56] Examples of diverse critical works that engage Foucault include Judith Butler's book *Gender Trouble* (1990), Karen Barad's book *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (2007), Nancy Hartsock's journal article "Postmodernism and Political Change: Issues for Feminist Theory" (1989), and Monique Deveaux's journal article "Feminism and Empowerment: A Critical Reading of Foucault" (1994).

[57] Deveaux, Monique. "Feminism and Empowerment: A Critical Reading of Foucault." *Feminist Studies,* Vol. 20, No. 20, Women's Agency: Empowerment and the Limits of Resistance (Summer 1994), 224.

for example, fills in her perceived limitations to Foucault's writing on power and discipline only through human social practices.[58] Instead, she argues for a study of technoscientific instruments of visualization that account for entangled materiality/"materialization of phenomena" that go beyond anthropocentrism.[59] In chapter three of this dissertation, I go in-depth into the historical and contemporary connections between biopolitics, race, and reproductive technologies. Feminist critiques of technoscience expand Foucauldian biopolitics by re-centering women's bodies in the conversation of social control through technology.

While not the only method, it is through the control of fertility that populations are constrained and monitored by nation-states and governments. Considering biopolitics through the various and diverse ways of observing a fetal ultrasound lends itself to common debates in the field of feminist science and technology studies. One debate revolves around the oppressive and liberating qualities of reproductive technologies. Fetal ultrasounds, and ultrasounds in general, evaluate problems and help confirm diagnoses.[60] I emphasize questions such as, who is most impacted domestically and globally by this technology's transition into the affective sphere? How does the interpretation of fetal imagery in popular culture and politics conflate seeing and knowing? How has this technology been argumentatively adopted and perceived as an evidentiary tool by America's anti-abortion movement?

The visual component to the ultrasound that provided an image of the fetus was not popularly used until the 1980s but was invented in the 1950s. This added functionality resulted

[58] Barad, Karen. "Agential Realism: How Material-Discursive Practices Matter" In *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, 141-151.

[59] Barad, Karen. "Getting Real: Technoscientific Practices and the Materialization of Reality" In *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, 210.

[60] For example, transvaginal ultrasounds can be used to assess any abnormal lumps in the lower abdominal area.

from the positivist tradition where human optics were privileged and vision became "closely associated with evidence in the western epistemology of science."[61] This tradition would influence how a fetus is perceived, constructed, and protected in the twenty-first century. Notions of love, separation, and personhood would forever be attached by humans to the powerful visual component that is the image of the fetus. It would no longer be just a device but rather when applied by humans on humans, become a hybrid diagnostic-affective device capable of assisting folks in identifying abnormalities while simultaneously assisting in moving one emotionally. One of the most prominent popular cultural examples written about by many visual studies scholars is the 1965 cover of *Life* magazine. This is not the only example of ultrasounds entering the popular space from the medical space, but it is a well-known example. I analyze this text in the following section spotlighting misrepresentations in popular culture and criticizing various objective claims predicated on affect and vision whilst calling attention to such claims' legal, political, and biopolitical ramifications.

Fetus on the Front Page

The cover from the 1965 issue of *Life* magazine reads "Drama of Life Before Birth" and features a colored photo of a fetus in the amniotic sac. The magazine features the "Foetus 18 Weeks" photo series captured by photojournalist Lennart Nilsson between 1958 and 1965 with the help of the women's clinic at the Sabbatsberg hospital in Stockholm. Ultrasounds capable of producing good quality fetal images were not yet invented so Nilsson consulted endoscope experts to combine photography and biology. According to *the Guardian* piece titled, "Foetus 18

[61] Roberts, Julie. *The Visualized Foetus: A Cultural and Political Analysis of Ultrasound Imagery* (London; Routledge, 2012), 6.

Weeks: the greatest photograph of the 20th century?" Nilsson would have two endoscope experts create "optical tubes with macro lenses and wide-angled optics that could be inserted into a woman's body."[62] He only photographed one living fetus in the womb through this procedure. The rest of the fetuses, either aborted or miscarried, were photographed outside of the womb and yet framed in an ethereal outer space echo chamber isolated from legitimate context. Historian of Science and Ideas Solveig Jülich, conducted rigorous research on the circulation of Nilsson's images in the anti-abortion debate. As she states in her article, "Lennart Nilsson's A Child is Born- the Many Lives of a Best-Selling Pregnancy Advice Book,"

> "These images were made possible either through surgical intervention due to ectoscopic pregnancies and miscarriages or legal abortions. This was before informed consent had been established as an ethical principle and oral evidence from my interviews with key medical actors suggest that the women undergoing operations were not asked about their participation in the photographic project (Jülich, in progress)."[63]

Jülich's ethical concerns with Nilsson's photographic project present similar concerns to Lazzaro Spallanzani's cruel experiments on bats in the 1700s. Again, surgical interventions were made in the name of scientific research and imaging in both cases I cite that connect biopolitical technology and violence. Nilsson's photographic project's dangerous leverage resided in its biopolitical intervention and its popularization of fetal photographic realism emblematic of contemporary 3D ultrasonic fetal images. This enabled claims of fetal personhood and the photos' spread in US anti-abortion movements.

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[62] Jansen, Charlotte. "Foetus 18 Weeks: the Greatest Photograph of the 20th Century?" *The Guardian*, Guardian News and Media, 18 Nov. 2019, www.theguardian.com/artanddesign/2019/nov/18/foetus-images-lennart-nilsson-photojournalist.

[63] Jülich, Solveig: "Lennart Nilsson's A Child Is Born: The Many Lives of a Best-Selling Pregnancy Advice Book", Culture Unbound, Volume 7, 2015: 634.

The publication's subtitle, "Drama of Life Before Birth" coupled with Nilsson's photographic isolation of the fetus, contributed to an early anthropomorphizing of the fetus through the photographic image. Through text and image, the reader was taken on a journey witnessing different stages of fetal development. The biological description of human embryonic growth coupled with the author's intentional colloquialisms and verbosity produced a hybrid article, one that was written like a story but described through science. When explaining weeks five and six of embryonic development, the author described it as a "weightless ride in a salty sack."[64] The marriage of the medical and popular culture through Nilsson's photographs suggests that the earliest non-militaristic use of ultrasounds was always already public. In other words, the ultrasound did not become popular through social media; it was already entrenched in popular culture. Two distinguished scholars who have written on fetal personhood and popular culture through *Life* magazine's cover are John Berger and Lauren Berlant. In *America, 'Fat', the Fetus*, Berlant, who mentions Berger's writing in the magazine, situates national discourse, structures of value, and framing through the spread. She states,

> "This is to say that new regimes of textuality, of capital accumulation, of national discourse, of the family, and of human embodiment were unveilled as mutually reinforcing structures of value by *Life,* and more than simple pro-choice arguments are implied in such a conjunction of domains. In a magazine that conflates all documentation with nationality, celebrity, and intimacy, the baby circulates as the tabula rasa of consumer nationalism, as an object consumed and as a citizen recast. This formation consolidates the structure of agency in mass citizenship that, as Berger says, now dominates American politics."[65]

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[64] *Time*, 100 Photos Collection, http://100photos.time.com/photos/lennart-nilsson-fetus

[65] Berlant, Lauren. *The Queen of America Goes to Washington City: Essays on Sex and Citizenship*. Durham; London: Duke University Press, 1997, 106.

Berlant continues her analysis by rooting the imbuing of personhood onto the fetus to photography's capacity. She assigns partial responsibility to the "photographic control of scale" coupled with text or captioning.[66] One of her unique contributions to scholarship in visual studies is her implication of magic. Influenced by the work of Walter Benjamin, Berlant highlights the "magical aura of reproduction" in this new photographic regime and its uniting of magic and science; therefore, uniting the sacred and the secular.[67] Before this photographic regime, the mother's body "functioned both as the representation of the fetus's body and as its armor. The expansion of the fetus to human and even superhuman scale within the frame of the photograph shattered the aura of maternal protection, making the fetus miraculous in a new way, vulnerable in a new way, and human in an unprecedented way".[68] Framing of a fetus through scale or caption complicates any claim to unquestionable or objective vision. In "Art, common sense and photography," Victor Burgin discusses the coupling of two images of motherhood that erase their particular cultural conditions. He states, "The message is ideological not simply because it is wrong in what it says- simply to be mistaken is not necessarily to be a state of false consciousness- it is ideological because it misrepresents the actual material condition of the world *in the service of specific vested interests.*"[69] Therefore, the fetus as a visual cultural message is connected not only to questions of photorealism but also to the political stakes of ideology. Nilsson's images appropriated by US anti-abortionists is evidence of the potential ramifications of this affective reconfiguration of the fetus.

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[66] Ibid., 106.

[67] Ibid., 107-108.

[68] Ibid., 108.

[69] Ibid.

Figure 5: *Time*, 100 Photos Collection, http://100photos.time.com/photos/lennart-nilsson-fetus

A Thumb to Suck, a Veil to Wear

18 WEEKS

This fetus, measuring more than six inches from crown to rump, is clearly sucking its thumb. This pre-natal practice prepares the baby to feed spontaneously as soon as it is born.

The new skin is still so transparently thin that the branching blood vessels appear to be right out on the surface. The thinness of the skin makes it exceptionally vulnerable to the baby's fast-growing fingernails. It may put quite a number of scratches on its face before it is born. (Sometimes one of the first things an attending nurse has to do after a baby is born is to clip its long, dangerous fingernails.)

The 18-week-old fetus is active and energetic and does a lot of muscle-flexing. It can make an impressively hard fist, and the punches and kicks are plainly felt by the mother. It can go through the motions of crying, too. It is equipped with a complete set of vocal cords but, without air, it cannot make a sound. It is still totally submerged in salty fluid, but as it grows to take up more and more of the amnion sac, there is less and less room for the fluid. The excess is carried out in the blood through the umbilical cord and placenta, to be excreted eventually by the mother.

28 WEEKS

The growing baby, now over 10 inches long and weighing 2¼ pounds, presses hard against the tough, elastic membrane that drapes it like a veil. This fetal membrane is the "caul" of folklore. At this stage the baby may have hair on its head. The skin is thicker but it needs protection from the long, salty immersion. To do this job, the skin makes for itself a white, creamy coating called the vernix. The cells that glue the now-completed eyes shut are wearing away, and soon the lids will open on a lightless world.

The umbilical cord is seen here passing around the baby's neck. This is not uncommon, and the baby is not in much danger of choking to death. This is because the cord remains stiff, like a full garden hose, and tends to straighten automatically when bent. It stays this way because the blood rushes through it at a speed of about four mph.

At birth, pressure of the fetal fluid can make the amnion sac expand. Under labor contractions the sac bulges and bursts, spilling forth its fluid; this is the familiar "breaking of the water." Here the development of the fetus is virtually completed, and some premature babies are born no older than this one. The extra time in the womb gives it added strength and health and time to acquire from its mother precious, though short-term, immunity to a number of diseases.

CONTINUED

Figure 6: *Time*, 100 Photos Collection, http://100photos.time.com/photos/lennart-nilsson-fetus

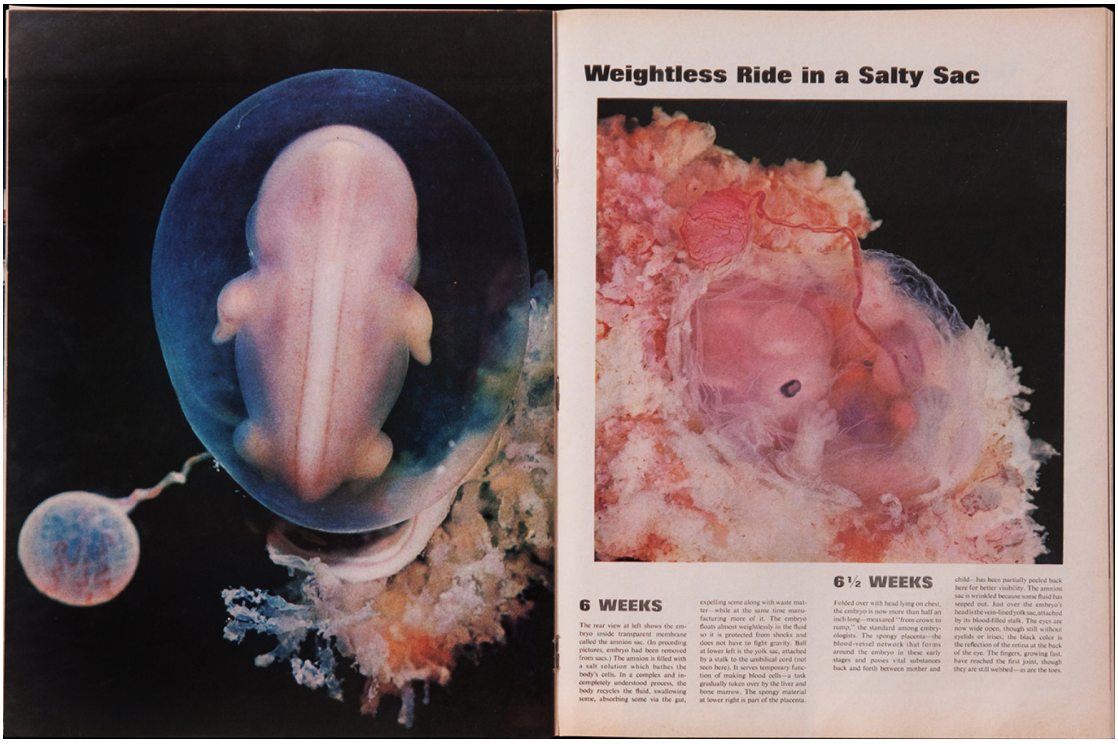

Figure 7: *Time*, 100 Photos Collection, http://100photos.time.com/photos/lennart-nilsson-fetus

In the 1970s, US anti-abortion campaigners used Nilsson's images without his permission. According to *The Guardian*, Nilsson would never make his stance on the political debate of abortion public, but on his proprietary website, archivists claim he objected to the circulation of his images within the anti-abortion community.[70] As his website claims, "with the publication of the images, pregnancy and prenatal development all of a sudden were a public matter, and it didn't take long before the photographs were hijacked by the radical anti-abortion activists of the pro-life movement, a use to which Nilsson deeply objected." But, according to historian Solveig Jülich, who wrote an extensive piece on the history of Nilsson's photographs,

[70] This is cited in both Jansen, Charlotte. "Foetus 18 Weeks: the Greatest Photograph of the 20th Century?" *The Guardian*, Guardian News and Media, 18 Nov. 2019, www.theguardian.com/artanddesign/2019/nov/18/foetus-images-lennart-nilsson-photojournalist and "Lennart Nilsson The Beginning," Lennart Nilsson Photography, accessed September, 25, 2021, https://www.lennartnilsson.com/.

> "...it is no easy matter to grasp his intentions and motivations. He himself has been reluctant to profess his standpoint concerning abortion and he has made vague and different statements during the years (Julich 2010, Julich 2016a). We cannot know for sure that he personally was against abortion but, as I have shown in an earlier study, he contributed pictures to anti-abortion campaigns led by prominent Swedish gynaecologists and doctors in the 1950s and early 1960s."[71]

His intentions are less crucial to my argument about contemporary media makers posting their ultrasound images on the internet. Instead, I am more invested in the reception and circulation of his work. His pictures published in *Life* magazine would develop into a full-length book. This book would be adapted multiple times, sometimes with different texts, all contributing to its positionality as a significant cultural memory.[72] According to Nilsson's website, "the issue became the fastest-selling copy in *Life*'s history, outnumbering even the moon landing and the Kennedy assassination."[73] The rigorous research endeavor of mapping out Nilsson's biography as it pertains to the circulation of his images in the anti-abortion debate has already been done by Solveig Jülich. Jülich's in-depth research on Nilsson provides us with a more substantial understanding of the various adaptations, versions, and *life* cycles of Nilsson's book and its copyright.

As Jülich describes, some of the uses of the book and its images were coordinated by Nilsson and Bonnier, the book's publisher in Sweden, while others were not.[74] It would take until

[71] Jülich, 629. Published by Linköping University Electronic Press: http://www.cultureunbound.ep.liu.se. The quote continues, "Further, while it seems safe to say that Nilsson, or rather his imagery, has played an important part in the reformed sex education in Sweden, there is no evidenced that this reflected an engagement for feminism and pro-choice movements. Rather, these different connections and the contradictions involved must be understood in their historical context, particularly the economic conditions for making and sustaining a photographic career in a changing media landscape and society".

[72] Jülich, 635-637

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[73] "Lennart Nilsson The Beginning," Lennart Nilsson Photography, accessed September, 25, 2021, https://www.lennartnilsson.com/.

[74] Jülich, 638.

1970 to clarify the publishing and copyrights of his work.[75] "As a result, today, he no longer recalls who permitted the use of Nilsson's images in *The Terrible Choice,* published in the USA at the end of the 1960s and often referred to as critical of abortion (Cokke & Buck 1968)."[76] As Jülich highlights, the circulation of Nilsson's images indeed depended on the country of circulation. In the US, Nilsson's images predominantly spread through the anti-abortion movement while in Sweden, the images were circulating in new audio-visual sex education curricula.[77] Nilsson's images being taken up by the anti-abortion movement is unsurprising given his outstanding technological achievement of procuring detailed images of a fetus decades before this was popular and possible with 3D ultrasounds. Three-dimensional images of a fetus depict a more realistic and recognizable image that bodes well for anti-abortionists. According to technology and culture writer Julie Roberts, because 3D sonograms show fetal anatomy in such great detail, those who are not clinically trained can quickly identify a 'baby,' now the main subject, leading to the spreading of these documents "beyond the clinic" giving "rise to strong claims to new visual knowledge of foetal existence."[78] She states, "the most contentious example of this is in the abortion debate. In the UK, USA and elsewhere, 3D sonography has been taken up as a new campaign image and been directly referenced as evidence of the need to review the legality of abortion."[79] And so, alongside more advanced imaging of fetal anatomy comes more

[75] Ibid.

[76] Ibid.

[77] Ibid.

[78] Julie Roberts, *The Visualized Foetus,* 4. Roberts mentions on pg. 4, "Feminist scholars have criticized the erasure of the female body in a range of public foetal images, from Lennart Nilsson's foetoscopy pictures to 2D ultrasound, arguing that it removes women as the subject of pregnancy and constructs the foetus as an independent individual (Petchesky 1987, Franklin 1991)".

[79] Ibid.

significant claims of authenticity now separated from a practitioner and a medical space. Julie Roberts' introductory case study highlights this with a Phillips advertisement for 3D ultrasounds whose intended spectator goes beyond a clinical audience.[80] In the advertisement, there is one large, close-up, black and white ultrasound image of a fetus. On the bottom right of this image is another photographic image of a small ultrasound machine. The caption of the advertisement reads, "because babies don't come in two dimensions. Philips 3D Ultrasound. Ultrasound images that are more like life itself: 3 dimensional and in real time. A true innovation that allows doctors to see things as they really are. It's a case of technology imitating life. It just makes sense".[81] Through their language, Philips aligns themselves with the anti-abortion movement by claiming the image they reference represents a baby. They overtly thread innovation in fetal imaging technology with the term "baby," a nomenclature commonly given to the newly born. Philips' gesture directs us to the political stakes of an ideology centered around not only possessive individualism but also the rights-bearing autonomous subject. This subject, in this case a reconfigured understanding of a fetus, is constructed in anti-abortion discourses and representations circulating in cultural, political, and economic contexts like the Philips advertisement.

[80] Ibid., 3-5.

[81] Philips 3D Ultrasound Advertisement. A description and thorough analysis of this advertisement can be found between page 1 and 4 of Julie Roberts, *The Visualized Foetus.*

Figure 8: Philips 3D Ultrasound Advertisement (Date Unknown)

As I have suggested, this positions Philips alongside the anti-abortion movement, who can easily make sense of this connection as it is fundamentally one they employ to argue for fetal protection. It suggests that if a fetus is a baby and a baby has rights, then a fetus has rights. As Roberts mentions, in both Lennart Nilsson's work and in this advertisement the pregnant person is absent, the fetus is the central subject, and "no human operator is visible."[82] The difference between the two lies in the audience's assumed knowledge with the Philips advertisement, as Roberts argues, dependent on a lay audience's implied knowledge and awareness of public fetal representations and images. The visual and discursive separation in the composition of Nilsson's work and the Philips advertisement are emblematic of Burgin's argument about ideology and misrepresentation. While Burgin discusses messages produced through the contrast of two images, the message in the Philips advertisement and Nilsson's photo series, that a fetus is a more central figure than a body sustaining, is produced through the juxtaposition of what one sees and what one does not see in the frame. Like Burgin, I am less concerned with the ideological suggestions that the fetus in the Philips advertisement is a 'smiling baby' or that Nilsson's photo series is reminiscent of a born baby sucking its thumb. I am more concerned with the desire to make claims that misrepresent "the material condition of the world" to confirm one's beliefs.[83] I contend these claims depend on an understanding of fetuses as meaningful, happy objects.[84]

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[82] Ibid., 4.

[83] Quote from Victor Burgin. "Art, common sense and photography", 43.

[84] This argument was made initially by Jennifer Denbow in her journal article on maternal-fetal bonding, titled "Good Mothering Before Birth: Measuring Attachment and Ultrasound as an Affective Technology" 4.

The inference of a 'smiling baby' is possibly the most apparent characterization of this. As Julie Roberts contends when analyzing the Philips advertisement, "The central figure of this advertisement is already a 'baby', not a foetus subject to the routine prenatal screening of which ultrasound is often part."[85] The projection of emotive qualities onto a fetus's facial expressions is only possible with 3D ultrasound imaging providing a more detailed visualization of facial features.[86] 2D ultrasounds are still recognizable as images of fetuses "but do not give the same indexical representation possible with 3D. The ease with which those of us who are not clinically trained can identify a 'baby' within a public 3D sonogram has aided the mobility of 3D sonograms beyond the clinic and given rise to strong public claims to new visual knowledge of foetal existence".[87] I take Roberts' argument further, contending that meaningful public claims are complicit in solidifying fetal ultrasounds as hybrid diagnostic and affective tools that sustain and excuse the disciplining of life in and outside of modern-day medicine. Hierarchical judgments made from fetal ultrasounds on which interpretations of life are worth protecting are contingent upon one's particular affective response to fetal ultrasounds and fetal representation. Without feelings towards this object, whether they be good feelings, bad feelings, or anything in between, there is no determining whose life or what forms of life is worthier. Nilsson's work is emblematic of the marriage between scientific and popular representations. Nilsson's photography shows that emotional connections to fetal ultrasounds precede the popular use of ultrasound technology in reproductive medicine. Nilsson's photo series, and its reception, reflect

[85] Roberts, 1.

[86] Paraphrasing Roberts, "The 'smile' of the foetus in the Philips advertisement would only be visible with 3D technology", 4.

[87] Roberts, 4.

the current entanglement of science and affect fundamental to my argument. The same social claims are strengthened with more advanced visualization techniques. Scientific visualizing advancements and affective declarations operate in a strongly entangled feedback loop, co-producing a social tool in medicine that works in a hybrid diagnostic-affective manner.

A Hybrid Affective-Diagnostic Tool

The social component of these documents is fundamental to my argument that ultrasound use is reconfigured into a hybrid tool, one that is aggressive, diagnostic, and affective. I have coined this term to reflect ultrasound technology's material and discursive heterogeneity. Especially as I present more digital case studies, it becomes increasingly difficult to separate an ultrasound document's diagnostic component from its affective component. I conceptualize the diagnostic and affective as interacting and engaging in both discursive and material ways. Karen Barad's philosophical framework of agential realism in *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* influences my conceptualization. When applied to technoscientific practices, agential realism serves as a productive framework that rejects absolutism and objectivity, reformulating approaches to claims of objectivity from visual documents, belief systems accompanying technological solutions to reproductive health, and notions of fetal personhood. With this reformulation in mind comes a rejection of the homogenous affective use of ultrasounds. In other words, not everyone feels a sense of bonding or disconnection when looking at their own or others' ultrasound images.

As Anthropologist Rayna Rapp describes, ultrasounds can be a means to engage or disengage. In her piece titled "Real-Time Fetus: The Role of the Sonogram in the Age of

Monitored Reproduction," Rapp includes first-person accounts of prenatal sonograms, citing the many ways women engage with the material.[88] She explains that some patients desired distance in fear that the pregnancy would terminate due to complications. In contrast, others wanted their partner to engage in the technologically mediated fetal imagery alongside them in hopes that it would increase their involvement in the pregnancy. Fetal "bonding" assumes a positive utility in contemporary U.S. culture. Underlying these forms of affect are assumptions of correct preparation for parenting and proper forms of parenting. As Lauren Berlant states, "the nostalgic energy for a family that does not yet exist and has never existed enables the new reproductive technologies-- which now include cinema and television-- to exploit commodity identification for the purpose of promoting 'family values,' which are said to exist outside politics."[89] Moreover, pleasurable identification of a fetus through personhood and protection reinforce ideological and prescriptive responses to pregnancy, childbirth, and notions of a good 'family'. "When we feel pleasure from such objects, we are aligned; we are facing the right way. We become alienated- out of line with an affective community- when we do not experience pleasure from proximity to objects that are already attributed as being good."[90] Therefore, when one does not feel a sense of connection or participate in forms of bonding-- that is, through gendering, naming, or recreationally imaging their fetus-- they are culturally condemned as misaligned. This

[88] Rapp, "Real Time Fetus," 611. Rapp engages with the common discourses surrounding the public viewing of the fetus and its impact on the subject/object positioning of the patient through ethnographic research on ultrasound use during pregnancies prior to amniocentesis.# She re-thinks the subject/object positionality of both the patient and the fetus through a Foucauldian analysis of the patient-doctor relationship arguing that the technology of the sonogram allows the doctor to divert attention onto the developing fetus as opposed to the pregnant woman. The same subject/object positioning is maintained as the fetus continues to garner the attention of online viewers and policy makers.

[89] Berlant, "The Queen of America Goes to Washington City", 140.

[90] Sara Ahmed, "Happy Objects," 37.

confirms that ultrasounds and value systems must be in alliance for the successful campaign to culturally predispose and relentlessly judge pregnant people on the correct way to be and participate in pregnancy. The rest of this dissertation addresses precisely this through the case study of social media, specifically YouTube videos.

Ultrasounds have been used for different reasons across multiple histories, professional fields, personal arrangements, and digital spaces.[91] Other people have pther relationships and access to ultrasounds depending on historical and cultural context. Karen Barad states, "As feminist analyses have made clear, ultrasound technology is a historically and culturally specific practice, involving discursive and material elements, that has differential effects on different bodies and lives." [92] This assortment speaks to diverse motives that, I argue, are made evident through social media. This reconfiguration of ultrasonography onto social media also influences how we think through a fetus as a protected citizen and gendered subject. My project addresses these formulations through the sharing of visual and personal information online, arguing that the social component is not simply social but also political. Videos of fetal ultrasounds with titles, captions, and comments that connote fetal personhood are no longer just 'keepsake' moving images. Like other forms of visual culture, they inform and contribute to existing discourses, in this case, discourses surrounding pregnancy and bodily autonomy in the United States.

Following Nilsson's *Life Magazine* spread and the inaugural use of ultrasounds in reproductive medicine, photographs have popularly become an object of devotion. Fetal representations have become a sign of life for families because of their mimetic register.

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[91] By personal arrangements, I am referring to both fetal ultrasounds at a doctor's office or non-medical fetal ultrasounds conducted for keepsake.

[92] Barad, 92

Ultrasound documents are data from sound waves bouncing off of tissue that is computationally converted into a semiotic visualization. Despite this, many viewers affected by these documents do not see them as models or visualizations but rather as photographs confirming the ultrasound's status as a hybrid affective-diagnostic tool. Because of this, many share their scientific documents online, broadcasting their fetus to the world.

Chapter 2: Broadcast Your Fetus

Figure 9: Document of 2D Fetal Ultrasound. Courtesy of Dalia Goel

This chapter begins with an abstracted moment captured as cells divide in my mother's body. I found the image somewhere in the plethora of saved family photos. Figure nine is an

image I took of a material, printed photograph. The photograph presents a fascinating instance where data and image operate in a supplemental mode. Included in the visual are Biometric and personal information only sufficiently understood by a trained medical professional. My mother's last name, GOEL, is typed clearly on the top left, suggesting the photo's origin. 04-NOV-93 marks the date of the sonography, four months before my birth on 25-MAR-94.

Moreover, biometric and personal data confirm the future formulation of the fetus. I continue to reference this photo in terms of me and my future self, which is symbolic of my emotional connection to it. So I ask, what are the stakes in seeing a version of myself in a sound-generated image of a fetus in my mother's uterus? How do my feelings of connection and intimacy towards this image mirror other affective engagements with fetal ultrasounds? Lastly, and as this chapter focuses on, how do intimate, affective engagement with fetal ultrasounds exhibited on YouTube contribute to our understanding of a fetus, community, bonding, and personhood? The document provided by my mother, Dalia Goel, of her fetal image captured in the 1990s reflects a larger pattern of saving scientific documents in family photo books. With the advent of sharing intimate and personal details facilitated through social media, this sharing continued with more broadcasting of these digitally mediated images on YouTube. The localized culture of sharing personal stories and experiences on YouTube speaks to a more significant trend of broadcasting the private. A popular form of this is the vlog, a combination of "video" and "blog," referring to short-form videos usually documenting daily life. This narrative format includes documentation of doctor visits, clinical ultrasounds, at-home fetal doppler videos, and gender reveal parties. When closely analyzed, these moving and still images of fetuses now interpreted, consumed, shared, and distributed online legitimize the hybrid diagnostic-affective

use of ultrasounds. As this chapter presents, stylistic tendencies in this genre enable the continued disembodiment of pregnant people. Through framing, we begin to see a separation between a pregnant person and a fetus alongside the advocacy of fetal personhood. These tendencies thread to existing mechanisms and strategies of control over reproductive rights.

Video publishers may not subscribe to the anti-abortion movement but present many of their tactical arguments in their videos. I argue that Foucault's notion of the *medical gaze,* the separation of a patient's body from a patient's identity by the medical institution, is present but that this separation is amplified by users themselves in the editing, construction, and filming of their YouTube videos. Users engaged in these videos sustain this dual observation, further establishing the patient and their body as entirely separate entities. This separation has been the most effective strategy for controlling reproductive freedom. With a pregnant person's subordination comes opportunities for control in the form of state legislation that seeks to provide fetuses with protections as human beings.

Moreover, whether the video creator wants to be or not, they participate in reproductive politics. The video creator is not the only participant implicated in reproductive politics. Through the comments, viewers amplify notions of fetal personhood with particular, affective language evidenced by insistent questions about the gender of the fetus.

Ostensibly, obstetric ultrasound technology is implemented primarily to monitor the growth of the fetus, predict delivery due dates, and check for any fetal (or placental) abnormalities. It is also possible, as the embryo had grown for approximately sixteen weeks, that upon this mechanized medical observation, the sex of the fertilized egg that would become me could be reasonably determined. In addition to the more immediate use of such recorded still and

moving images, these documents are utilized for pedagogical purposes, training ultrasound technicians and medical students on reproduction and embryonic development. But, ultrasound imaging has provided physicians with a sufficient understanding of fetal growth and positioning and has helped create a new cultural practice of recording and decoding social attributes, like the *gender* of one's fetus, from a fetal ultrasound. In contemporary popular culture, these mass mediated representations of maternity have been exhibited as vlogs on *YouTube,* shifting this representational space into something more closely resembling a home-video genre.[93]

As I established in chapter one, ultrasound has been configured and reconfigured as a hybrid diagnostic-affective tool by their popular application and cultural discourse resulting in different ways of seeing and defining a fetus. I consider fetal ultrasounds on YouTube arguing that pregnant people broadcast their scientific documents in ways that suggest and confirm fetal ultrasonography's affective register. While engaging in critical digital studies and social media studies, I consider how the affective register functions explicitly on YouTube and how the same affective strategies are a shared component of the anti-abortion movement. Some documents are deeply embedded in the political debate over the right to choose more than others are. Some are not intended to be situated directly in the political discussion but, through framing, language, and engagement, prove to be equally political[94], even if the video publisher[95] is unaware of it.

[93] These two genres coalesce with gender reveal vlogs where the sex of the fetus is build up with excitement and eagerly awaited. Ultimately, the sex of the 'new family member' is revealed with enthusiasm.

[94] Politic and 'the political' is defined in this dissertation as anything relating to ideas, discourses, and/or strategies of particular groups as they might be mobilized to impact local and national legislation.

[95] Using video publisher as a term to refer to the user who originally posted their video on *YouTube.*

The difference in the content on social media platforms reflects how different internet echo chambers interact with fetal discourse and imagery. YouTube hosts many gender reveals, fetal ultrasound moving images, and personal vlogs, while Reddit hosts more activist memes and self-help resources on the anti- and pro-choice fronts. TikTok has more satirical and performative videos made by young adults highlighting their outrage with the conservative discourse on this debate. This chapter is solely concerned with YouTub vlogs designed for publicizing and sharing one's life. YouTube proves an exciting medium to analyze as users share self-published and edited scientific documents with a community of people. They can monitor comments on their page, delete their videos at any time, and "private" their video making it only visible to them.[96]

YouTube's slogan, "Broadcast Yourself," is symbolic of the site's interest in viewers participating in making their personal life public. Founded in 2005 and bought by Google in 2006, *YouTube* is an "interpersonal video-sharing service" that has transformed and, in some ways, combined notions of 'platforms' and 'communities' on the internet.[97] The service hosts video content by companies/brands and individual users, proving valuable for commerce and community-building. "YouTube has become the very epitome of digital culture not only by promising endless opportunities for viral marketing or format development, but also by allowing 'you' to post a video which might incidentally change the course of history."[98] Moreover, YouTube operates in a hybrid area between community spaces and global commerce and between user-generated content and copyrighted material.[99] I consider my case studies to be

[96] However, they cannot control what is done with such videos if they are illegally downloaded from social media.

[97] Snickars, Pelle, and Patrick Vonderau. "Introduction." In *The YouTube Reader*, 2009, 10.

[98] Ibid., 11. This is one of many critical interpretations of YouTube.

[99] Paraphrasing from "Introduction" to *The YouTube Reader.* Full quote paraphrased states, "In Lawrence Lessig's view, translating such delimited community spaces into global commercial ventures is a general feature of the

user-generated content. While such content can be for personal and financial benefit, they are fundamentally engaged with by users in a different way than content like corporate advertisements or copyrighted material might be. Stylistically, the user-generated content I analyze is in the form of video blogs, also known as vlogs, of fetal ultrasounds, often with declaratory and revelatory presentations of gender, a problematic term used within this medium. The more accurate description would be "sex," as one should not assume the gender of their fetus. Despite its inaccuracy, I will continue to use gender, in certain instances, as terminology that the subjects of my research employ and that relates directly to the localized culture developed by the individuals on *YouTube*, as their terminology is emblematic of a larger cultural discourse. I consider the ramifications of such interpretations on cultural, fetal discourse, politics of representations, and reproductive rights. A scholar who has written extensively on this is medical anthropologist Janelle S. Taylor, who writes on obstetrical ultrasounds and sonography as both medical practice and as a technology that contributes to the "making of the Public Fetus."[100]

Similar to my approach, Taylor employs a material-discursive framework in her study of sonograms approaching them as texts "with very real material and social consequences for people's bodies and lives."[101] Taylor analyzes public cultural artifacts including car and telephone service advertisements, magazine spreads, antiabortion television, educational tapes,

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internet's new 'hybrid economies.' The dialectics of commerce and community, copyrighted material and user-generated content, and the way video is being distributed all relate to economic features of so-called emergent social-network markets" 12.

[100] Taylor, Janelle S. *The Public Life of the Fetal Sonogram: Technology, Consumption, and the Politics of Reproduction*. Rutgers Univ. Press, 2008.

[101] Ibid., 3.

and congressional testimony. Her study of telephone service advertisements depicts how such advertisements have linked ultrasounds as a technology to notions of bonding and connectivity. I extend this argument to vlogs on *YouTube.* I can't analyze all videos on social media platforms comprehensively. I do not claim that this chapter, or even this dissertation, addresses something approaching a representative sample. I recognize the problems with this highly selective methodology. I am closely reading a subset of an impossibly massive field as it allows me to conduct a detailed examination of selected videos and comments.

Methodology

I selected the videos I read closely through a virtual snowball sampling method. In the context of YouTube videos, a virtual snowball sampling method is a nonprobability sampling technique where each subject, in this case, videos, would recruit future subjects or future videos. After one video is viewed, YouTube's sidebar-related function would recommend other similar videos. I gathered my final data from this collection of recommended videos. Moreover, my sample is not representative of all fetal ultrasonography on YouTube. They are diverse - some in the most observational mode as videos of fetal ultrasounds, with no narration and synchronous sound. Others were in the form of vlogs. They were more constructed, edited to music, and accompanied by reaction shots. Bodies recorded in fetal ultrasounds are now repurposed and edited into home videos communicating the subjective experience. In some cases, they relate well to suspense narratives in their titles and content, suggesting a forthcoming and highly anticipated revelation. I argue that while this new mass-mediated representation of maternity is partially complicated by the ability to monetize, even if slightly, and minorly control recorded

self-documentation, it also enables the advocacy of fetal personhood and the continued disembodiment of women by formally separating them from their fetus. To substantiate my argument, I analyze three viral and thematically relevant vlogs representing the complexities of the maternal space on *YouTube* to identify generic conventions of this phenomenon and its ideological implications.

Mediated Representations of Maternal Spaces on YouTube

Despite disagreements on mechanized observation and the conflation of seeing and knowing, the sound-produced images are utilized as evidentiary tools in vlogs attempting to substantiate the proclamation of a fetus' gender. The medical gaze dictates one coded way of seeing operating in this mediated representation of maternal space. Foucault defines the *medical gaze* as the tendency to separate a patient's body from the patient's identity.[102] This dual observation establishes the patient and their body as entirely separate entities. The silent ultrasound documentation titled *20 weeks Ultrasound (It's a boy),* published on March 29th, 2016, by an individual with the username *Brittney G,* displays the conflicts between ultrasound technology in its simultaneous existence as a tool for empowerment and a disembodied maternal space.[103] The minute and forty-one-second-long video have no narration or editing, simply a recorded video of the fetus in its mother's uterus. From March 2018 to June 2018, this published video's view count grew by one million views and, as of June 18, 2021, has 8,299,267 views.

[102] Michel Foucault, *The Birth of the Clinic: an Archaeology of Medical Perception.* (New York: Pantheon Books, 1973).

[103] Brittney G. "20 weeks Ultrasound (It's a boy)". Filmed [March 2016]. YouTube video, 01:41. Posted [March 2016]. https://www.youtube.com/watch?v=4XIhADQ8WgE.

Embedded within the medical document is both the time code and date of filming, March 25, 2016, four days before the video was posted on YouTube. The video itself has 491 comments, with some users like *Gorgeous Porto Rican Jay* stating, "omg he's sucking his thumb lol." Many individuals related to the video commenting that they, too, were 20 weeks into their pregnancy and excited for their next ultrasound. This community, seemingly made up mainly of mothers, develops one form of opposition to the established medical authority over the resulting images of a fetal ultrasound through the collection of the mother-to-be and mother-authored content. This representation of the maternal space is now incrementally controlled by mothers themselves, not wholly by medical and political institutions. No longer counting exclusively on physicians' accounts of what we see, pregnant people talk about their pregnancies on their terms. But, this form of opposition is reasonably modest when considering the many ways the medical establishment and YouTubers are aligned. This is most clear in their interpretation of gender in visual images through similar binaries. For example, gender reveal sonograms interpreted accurately and inaccurately by both physicians and laypeople classify sex differences between males and females in the human species through the visual and recognizable presence or absence of a visual indicator that can be interpreted as a penis. This trend proves just how unreliable these visual images are when identifying and classifying the critical signs of gender.

Despite *Brittney G's* vlog's lack of a conventional *medical gaze* from physician to the patient, disembodiment is still operating in a different medium and fashion. Seemingly, these videos also create communities of individuals bonding and sharing experiences of *fetal motherhood* through the connection provided to them by the internet.[104] Despite the development

[104] *Fetal motherhood* is a term coined by Lauren Berlant. Lauren Berlant, *America, "the Fat," the Fetus* (Durham: Duke University Press, 1994), p. 147.

of communities through this medium, there are additional political and ideological repercussions to the disembodiment present in this particular silent vlog. Lauren Berlant states in her piece, *America, "Fat," the Fetus,* "the pregnant woman becomes the child to the fetus, becoming more minor and less politically represented than the fetus, which is in turn more privileged by law, paternity, and other less institutional family strategies of contemporary American culture."[105] This is true within the framing and context of this published video. The mother is not heard or seen, only visible is the sound-generated abstraction of the moving fetus inside the pregnant person's uterus. Due to how ultrasounds are constructed from data made from sound bouncing inside the body and not outside, this formal framing is a relatively common component of many fetal ultrasound vlogs. Additionally, given the typical structures of doctor visits, it is commonplace for pregnant people to watch this disembodied documentation of their internal organs live on another screen. This act of witnessing is especially prevalent during vlogs recording "gender reveals" during a doctor's visits where ultrasounds are performed to delineate the sex of a fetus. When such videos are published online, both the affective engagement with ultrasound images and the community-oriented and highly participatory aspect of *YouTube* become apparent.

Vlogs on *YouTube* commonly merge multiple genres in their form, advertising strategy, and content. In their biographical form, vlogs can be considered part of a hybrid home-video/memoir genre depicting the simple everyday lives of content makers. An example of a more biographical video in which the filmmakers are subjects includes the video posted by

[105] Ibid., 147.

Britt's Space on June 14th 2013, titled "Boy or Girl? (Dramatic Gender Reveal)".[106] The declaration of "Dramatic Gender Reveal" as an advertising tactic in the title for search engine optimization seems to suggest a form of suspense and entertainment in the content of the vlog.

The video begins with a couple walking to their doctor's appointment, followed by a montage edited with music at the doctor's office.[107] With this in mind, one minute into the video we see a recording of a fetus on a monitor. In the background are a non-diegetic piano track and the discussion between the couple and a medical professional who explains the anatomy and the presumed sex. The practitioner assumes the fetus is female. The camera is shaky, moving around and then tracking the mother's face when the medical professional realizes the fetus is going to be a *girl* then, the camera pans back to the monitor displaying the fetus. Suddently, the fetus moves and the umbilical cord shifts, confusing the medical professional who then states the fetus may be a *boy*. With this plot shift, the camera pans back to the mother, who is sufficiently frustrated by the altered news. One comment from *lifespinkbubbles* shares the presumed dissatisfaction with the first reveal and the physician commenting, "its obvious it's a boy. This lady is so unprofessional." Another user, *greenbanana1001,* shared a similar sentiment commenting, "When the nurse said it's a girl I was like.. It's obvious it's a boy." For some, the video provoked doubts about their ultrasounds. Both the content and the medical authority seem available for questioning but not the affectivity of the images themselves. *Lisa Addams* commented, "This makes me want another ultrasound, I was told girl without even being shown the screen! Lol." The general attitude in the comments displays a collective of individuals who

[106] Britt's Space. "Boy or Girl? (Dramatic Gender Reveal). Filmed [June 2014]. YouTube video, 06:58. 06:58. Posted [June 2013]. www.youtube.com/watch?v=C6CKvj7y9GY.

[107] While the video refers to the reveal as a "gender reveal," I will be mindful of potential conflations of sex and gender, and therefore only refer to the presumed sex of the child unless quoting the title or content of the video.

feel compelled to confidently vocalize intuitive interpretations of their body and of the digitized bodies of other individuals online.

The act of witnessing a parent find out the sex of their fetus is more than just a video of a reveal, but a more profound panoptic experience. We, as viewers, watch reproducing parents narrate and watch themselves on screen, a unique form of the contemporary reproductive Panopticon. This witnessing of a form of self-surveillance is filled with its own forms of control, empowerment, and participation.[108] In the case of reaction videos, the material existence of the live imaging systems within the context of a physician's office means that the initial viewing was on a monitor, so for the reveal video to maintain authenticity, the surveillant reproductive setting must persist by default.

While this interpretation of self-surveillance can be emancipatory, the "dramatic gender reveal" narrative is directly counterintuitive to broader sentiments of women's empowerment in its framing of the fetus, through gender and genre implications, as a character and person, within the narrative. The framing of the fetus correlates to the representation of a fetus developed by the anti-abortion movement attempting to transfer rights from an individual to a fetus, provoking a new way of understanding citizenship and national identity. [109] As Berlant states,

> "By merging the American counterdiscourse of minority rights with a revitalized Providential nationalist rhetoric, the anti-abortion movement has composed a magical and horrifying spectacle of amazing vulnerability: the unprotected person, the citizen without a country or a future, the fetus unjustly imprisoned in its mother's hostile gulag."[110]

[108] This is a more active surveillance model as opposed to a passive surveillance model. On p. 226 of Feminism and Empowerment: A Critical Reading of Foucault, Monique Deveaux critiques passive surveillance models that do not account for a women's social and economic context.

[109] Lauren Berlant, *America, "Fat," the Fetus* (Durham: Duke University Press, 1994), p. 150.

[110] Ibid., 150.

The "gender reveal" vlogs perpetuate a framing of the fetus as an entity with rights reinforced through a humanizing deeply contingent upon its revealed "gender". Presuming the gender and even the act of attaching a gender to a fetus before its birth is part of a more extensive ideological process as if this knowledge is not only beneficial but necessary for the parent or parents' preparation.

The live reaction recording of fetal sex reveals in the office of one's OBGYN is not abnormal on *YouTube*. After clicking *Britt's Space* video, similar videos erupted on the 'related videos' bar. Almost every title of the ultrasound video included the week of pregnancy followed by the presumed gender of the child. *Raising the Barrs* published a video on July 5, 2016, titled "19 WEEKS ULTRASOUND GENDER REVEAL."[111]

The description of the ten-minute-long video with 155,540 views [112], includes several links to previous vlogs at various weeks in the individual's pregnancy including a link to the "LIVE PREGNANCY TEST," "BAKING SODA GENDER TEST," and "OUR AMAZING 4 TH OF JULY THEMED FIREWORK GENDER REVEAL." The amount of self-made public videos involving this individual's pregnancy implies an archival and possibly preservationist approach to the nine-month-long experience, one that is genuinely exhibitionist. This form of online exhibitionism on a public and social forum proves interesting as a form of branding and profit. This relates to David Bell's work on surveillance as a mode of opposition. In Bell's piece titled, "Surveillance is Sexy," he considers the resistance to surveillance through eroticism. While eroticism as a tool to combat surveillance is not part of my argument, I do think his proposition

[111] All videos, including this one, from the channel have either since been deleted or put on "private".

[112] View count as of June 24, 2021.

that one can deflect the *surveillant gaze* through mobilization of exhibitionism and creation of 'home videos' is relevant to the vlogs on fetal ultrasounds posted onto *YouTube*, specifically the videos posted by *Britt's Space* and *Raising the Barrs*. The extravagant week-by-week collection of vlogs documenting the pregnancy of an individual who goes by the username *Raising the Barrs,* provides an example of control over the exhibition of oneself and one's body that can inadvertently deflect contemporary conceptions and repercussions of surveillance.[113]

Gender Reveals and Fetal Heartbeats

"19 WEEK ULTRASOUND GENDER REVEAL." posted by *Raising the Barrs* begins with an establishing shot showing the location as "Precious Peak 4D Ultrasound"" and then pans down to the individual's daughter.[114] The next shot is in a dimmed room during the fetal ultrasound which is seen not only on the monitor but is also fully projected onto a blank wall in the room. The young daughter is heard questioning the images, "Is there three of them?" The child's instant confusion and inability to decipher the images is completely understandable. The black and white silent film projected on the wall is difficult for anyone, including experts in the medical field, to interpret perfectly. The mother chuckles in response, "no baby, aw look at the hand, they are trying to show us the gender." This extremely popular propensity is made more evident by *MaryLynn* who comments on *Raising the Barrs'* vlog with, "Just curious would you

[113] Bell, David. "Surveillance Is Sexy." *Surveillance & Society* 6, no. 3 (2009): 203–12. https://doi.org/10.24908/ss.v6i3.3281.

[114] Raising the Barrs. "19 WEEK ULTRASOUND GENDER REVEAL." Filmed [June 2016]. YouTube video, 10:05. Posted [June 2016]. www.youtube.com/watch?v=gRhzOXN8UQg.

have enjoyed the sonogramher [*sic*] come to your home or gender reveal party? I'm starting a business and would like feedback. Thank you and congratulation."[115]

Despite the empowerment associated with control over one's exhibition, profiting off of women's bodies, even if by women, is still a feature within this social media space. This is evident in *MaryLynn's* comment and in the ability to acquire financial gain through advertisers on a popular *YouTube* video. While profiting from one's medical documents seems progressive, this trend fits well within a post-feminist culture. As Yvonne Tasker and Diane Negra state in the introduction of *Gender and the Politics of Popular Culture*, "postfeminist culture works in part to incorporate, assume, or naturalize aspects of feminism; crucially, it also works to commodify feminism via the figure of woman as empowered consumer."[116] Tasker and Negra continue to appropriately argue that as consumption is a strategy for producing the self within this culture, postfeminism is likewise white and middle class.[117] The extent of and regard for reproductive care provided to an individual in America depends on one's race. As stated by the *Centers for Disease Control and Prevention* on a section of their website discussing Maternal and Infant Health, "the risk of pregnancy related deaths for Black women is 3 to 4 times higher than those of white women."[118] Keeping in mind what groups have access to sufficient reproductive care and those who have the leisure and resources to record such care is imperative when considering the reproductive care of and discourse surrounding the most vulnerable groups.

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[115] Ibid.

[116] Diane Negra states in the introduction of *Gender and the Politics of Popular Culture*, 2.

[117] Ibid., 2.

[118] *Pregnancy-Related Deaths, Pregnancy, Reproductive Health, CDC.*

Alternative modes of exhibition provide privileged individuals with new and powerful forms of self-expression. One can view this trend as an extension of the feminist movement where women prioritized "forthright interpersonal communication; equal stress on the integrity of process as well as product; open and universally accessible structures for decision making (and) shared responsibility for the domestic and familial."[119] While a digital community of pregnant people provides an instance of shared prenatal experience, it also chronicles an individual's subjective and personal narrative. Individuals retain some command over self-published documents of their body as they can post, delete, or hide them. This command contrasts with an individual's lack thereof over how their ultrasound document can be utilized in the medical and legal sphere. Outside of an online space, one cannot turn their video on "private" or delete it. In some cases, one is forced by physicians to watch their fetal ultrasound videos, even if not medically necessary, in hopes that fetal-parental bonding will occur and discourage one from terminating their pregnancy.

According to the NARAL Pro-Choice America (formerly the National Association for the Repeal of Abortion Laws, and National Abortion Rights Action League), "still, several states across the country require physicians to perform an ultrasound before performing an abortion. Some of those states also force a female to view the ultrasound or listen to the heartbeat, even if she directly objects".[120] Compulsory ultrasound imaging is not only a powerful illustration of

[119] Michael Renov. "New Subjectivities: Documentary and Self-Representation in the Post-Verite Age" in *Feminism and Documentary*, edited by Diane Waldman, vol. 5 (Univ. of Minnesota Press, 1999), 89.

[120] Forced Ultrasound Laws." *NARAL Pro-Choice America*, https://prochoicecalifornia.org/issues/forced-ultrasound-laws/.

intimidation but also a particular instance where fetishism and surveillance intersect. [121] "Fetishization, in turn shades into surveillance when physicians, 'right-to-life' propagandists, legislatures, or courts impose ultrasound imaging on pregnant women in order to 'encourage "bonding"'… Indeed, the very idea of 'bonding' based on a photographic image implies a fetish: the investment of erotic feelings in a fantasy." [122] Investment in bonding with the photographic image goes beyond viewing, as evidenced by legislation and consumer products concerned with fetal heartbeats. This interest quickly turns into legal concern with state legislatures passing Fetal Heartbeat Bills stipulating abortions are illegal as soon as one can detect a fetal or embryonic "heartbeat."[123]

Fetal Heartbeat Bills depend upon the legal concept of fetal viability written in both the 1973 Supreme Court Ruling, *Roe v. Wade*[124], and the 1992 Supreme Court ruling, Planned *Parenthood v. Casey*[125]. *Roe v. Wade* recognized the right to abortion as included in the right to privacy until potential life at fetal viability, which can be determined by states.[126] Moreover, one has the right to abortion until a fetus can potentially live outside of the womb.[127] While *Roe v. Wade* allowed for states to determine fetal viability through trimesters delineating "different

[121] Rosalind Pollack Petchesky, "Fetal Images: The Power of Visual Culture in the Politics of Reproduction" in *The Gender/Sexuality Reader: Culture, History, Political Economy* (Psychology Press, 1997).

[122] Ibid., 277.

[123] I discuss this further in chapter three around p. 88-90.

[124] *Roe v. Wade*, U.S. 113 (1973).

[125] *Planned Parenthood v. Casey,* 112 U.S. 2791 (1992).

[126] Romanis, Elizabeth Chloe. "Is 'viability' viable? Abortion, conceptual confusion and the law in England and Wales and the United States", *Journal of Law and the Biosciences*, Volume 7, Issue 1, January-June 2020, lsaa059, https://doi.org/10.1093/jlb/lsaa059.

[127] Ibid.

developmental phases in gestation," *Planned Parenthood v. Casey* eliminated this framework.[128] According to Biolaw scholar Elizabeth Chloe Romanis, "the Court replaced the trimester framework with the 'undue burden' test, holding that a law is unconstitutional if its 'purpose or effect is to place substantial obstacles in the path of a woman seeking an abortion before the fetus attains viability.'"[129] Additionally, in *Planned Parenthood v. Casey* viability was re-determined as dependent upon medical technologies and developments.[130] Moreover, fetal viability enlists a legal framing of life in a manner that, when presented alongside heartbeat discourse, suggests fetal protections while restricting pregnant people's freedom of choice to abort.

Heartbeat Bills were first introduced in Ohio in 2011 by Janet Porter, the Founder and President of Faith2Action, an activist organization devoted to this cause and self-proclaimed "birthplace of the Heartbeat Bill".[131] Introduced to the Ohio House Committee in 2011, the Ohio "heartbeat" legislation is worth noting as it would be the first of many attempts to have live ultrasounds in court to, as the bill's proponents would contend, communicate the testimony of fetuses.[132] Two pregnant Ohio residents were scanned by ultrasound machines projected onto a video monitor. One was fifteen weeks pregnant, the other was nine weeks pregnant.[133] The

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[128] Ibid.

[129] Ibid.

[130] Ibid. For a more thorough account of viability in Roe v. Wade and Planned Parenthood v. Casey see the cited piece by Romanis, Elizabeth Chloe. "Is 'viability' viable? Abortion, conceptual confusion and the law in England and Wales and the United States", *Journal of Law and the Biosciences* and J. Glover, Causing Death and Saving Lives, 124 (Penguin, 1990).

[131] Faith 2 Action, https://f2a.org/f2a-about/. Accessed March 4, 2022.

[132] This bill, HB 125, was shelved by the Republican majority Senate.

[133] Marshall, Aaron, "Ultrasound images of two fetuses shown to lawmakers during 'heartbeat bill' hearing", *Cleveland.com*, March 2, 2011, https://www.cleveland.com/open/2011/03/ultrasound_images_of_two_fetus.html.

unprecedented use of live ultrasounds in courtrooms to claim testimony from unborn fetuses would continue into 2017, where Faith2Action claims an "18-week-old unborn baby Lincoln 'testified' in favor of the Federal Heartbeat Bill (HR 490) via ultrasound" to the House Judiciary subcommittee.[134]

Forced viewings and Heartbeat legislation overtly display the affective and abusive potential when people's bodies, frequently women's bodies, are up for interpretation. It is but another instance of the *hybrid gaze* that I will define as the simultaneity of Laura Mulvey's *male gaze,* and Foucault's *medical gaze*. Contemporary society and popular culture are saturated with various procedures for exhibiting and utilizing medical documents of women's bodies, with some progressive and others abusive and objectifying. As Cowie states, "The desire for a reality held and reviewable had been articulated within sciences as well as the arts long before cinematography."[135] Both science and film depend upon theories of photographic realism to substantiate claims and relationships within the arts and sciences. This assumption of objectivity is dangerous when it fails to consider strategies that assist in establishing legitimacy. I insist that despite the instances where this format provides increased empowerment, it is by no means a perfect revolutionary medium but is symbolic of a more subjective narrative, not completely controlled by an institution or ideology. Anonymized and detached medical documents of fetal ultrasounds are still posted online and serve ideological agendas in various political documentaries.[136] The Panopticon at play reveals itself in various forms, sometimes as

[134] Faith 2 Action, https://f2a.org/f2a-about/. Accessed March 4, 2022.

[135] Elizabeth Cowie, *The Spectacle of Actuality and the Desire for Reality.* Minneapolis: University of Minnesota Press, 2011 p.6.

[136] *The Silent Scream* (1985), is a short film directed by Jack Duane Dabner and narrated by Dr. Bernard Nathanson using the technologies of fetoscopy and ultrasound to argue against the practice of abortion. The film begins with a

institutional surveillance and other times as self-promoted surveillance, and most times as both. Either way, because fetal ultrasound has many established mechanisms for maintaining power over women and their bodies, individuals have actively and subconsciously created new ways of detaching from such systems. In the case studies analyzed above, each possesses enough views to monetize the video blog published.[137] While a form of reclamation, viewing the fetus as a spectacle lends itself to abstracted political mimicry. A viewer's relationship to the object being filmed is detached, with the experience more closely associated with viewing a black and white silent film rather than a sound-generated imaging of a liquid-filled living organ. This abstraction allows the viewers to treat the organ inside the uterus, and the eventual fetus, as a detached spectacle. Roberty Heynen and Emily van der Meulen write in their chapter *Gender Visions: Reimagining Surveillance Studies*, "In collecting, organizing, and mobilizing information… surveillance practices are deeply implicated in relationships with power and inequality".[138] What is not acknowledged in this embracing of photographic realism is the inexistence of the infallible eye, both physically and theoretically. "The human eye, however now shows to be a limited organ, misleading and imperfect in its observations, and human vision becomes instead a realm of the fallible. A subjectivity of site comes to the fore at the same time and as a corollary of a

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fetal ultrasound image alongside Dr. Bernard Nathanson's narration stating, "Now we can discern the chilling silent scream on the face of this child who is now facing imminent extinction". Immediately following this statement, ominous music plays, cueing a hyper saturated, color-shifting title card reading, "Silent Scream" in a typography resembling that of the conventional horror film. As the title continues to change colors, the backdrop, an image of a fetal ultrasound, shifts in color to compliment the title card. The aestheticized image of the organ inside an unidentifiable human's uterus sets the tone for the perpetual appropriation of medical images within the film. The viewer is meant to see the presumed fetus as spectacle and the human for which we have entered, unimportant.

[137] Popper, Ben. "YouTube Will No Longer Allow Creators to Make Money until They Reach 10,000 Views." The Verge, April 6, 2017.

[138] Emily van der Meulen and Robert Heynen, eds, *Expanding the Gaze: Gender and the Politics of Surveillance* (Toronto: University of Toronto Press, 2016), p.11.

heightened scientificity or objectivity of apparatus."[139] The implication of an infallible eye, the claim of authority over both the body and uterus, the insinuation of legitimacy developed by the expert voice, the treatment of the fetus as spectacle, and the political mimicry alienating women's bodies from the human all coexist to establish and parallel the current strategies used to maintain power over women's bodies. While vlogs of fetal ultrasound experiences on *YouTube* are seemingly favorable in their reclamation of surveillance and potential for monetization, the framing of a fetus as a person through both gender delineations and parental disembodiment assists in charging a patriarchal feedback loop, one that facilitates inequality and determines the future of women's reproductive rights.[140]

As mentioned earlier in the chapter, Wisconsin, Kentucky, Louisiana, and Texas still require forced ultrasound viewings before an abortion. This compulsory ultrasound imaging is both a powerful illustration of intimidation and an intersection of fetishism and surveillance.[141] This surveillant mode needs the fetishizing of the fetus to be substantive and impactful. Fetishizing a fetus is often paraded as fetal personhood serving particular political and legislative agendas. Fetal heartbeat discourse is a significant example where fetishism, surveillance, and notions of personhood compound with one another to anchor abortion restriction legislation.

In 2019, *Heartbeat Bills*, legislation that prohibits abortion if a fetal heartbeat can be detected, were introduced by nine states and passed in six.[142] Not all have gone into effect as the

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[139] Elizabeth Cowie, *The Spectacle of Actuality and the Desire for Reality* .(Minneapolis: University of Minnesota Press, 2011), p. 7.

[140] I further discuss monetization and why it matters between pgs 82-83.

[141] Rosalind Pollack Petchesky, "Fetal Images: The Power of Visual Culture in the Politics of Reproduction" in *The Gender/Sexuality Reader: Culture, History, Political Economy* (Psychology Press, 1997).

[142] "Abortion Bans: 9 States Have Passed Bills to Limit the Procedure This Year" by K.K. Rebecca Lai, May 29, 2019. https://www.nytimes.com/interactive/2019/us/abortion-laws-states.html.

bills have been challenged or blocked in all nine states' lower, upper, or executive courts. As of November 2021, Heartbeat Bills are currently temporarily reinstated in Texas and Oklahoma.[143] Fetal heartbeats are claimed to be detected with the help of ultrasonography. It is not uncommon for heartbeats to be detected or claimed during routine prenatal checkups. Many individuals save and upload these fetal ultrasound documents of "fetal heartbeats," sharing them on YouTube. Fetal ultrasound heartbeat videos produced from ultrasonography further promote fetal personhood and ultrasound's capacity to produce affect and diagnosis. While a potent example of the internet's capacity for social connectivity, engagement with such documents on YouTube is socially linked to more nefarious fetal discourse. This includes any fetal discourse attempting to subordinate a pregnant person to protect a fetus.[144]

I define videos under the fetal heartbeat ultrasounds genre as any public video that claims to document a fetal heartbeat. This can be in the medical sphere, an ultrasound in a doctor's office, or the domestic sphere, a portable fetal doppler self- examinations[145]. An example is *Jubileejune83's YouTube* video titled "First Ultrasound-Baby has a Heartbeat!".

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[143] Ibid.

[144] I discuss the legal enlistings of fetal heartbeats further in chapter three, specifically p. 88.

[145] Fetal Dopplers can be used to generate audio of fetal heartbeats or visuals of a fetus. Products like WuMusic and BabyBeat are used by consumers without a medical professional for purely nonmedical reasons. Others, like Butterfly IQ +, are marketed for use by medical professionals and can provide visual images to a smartphone.

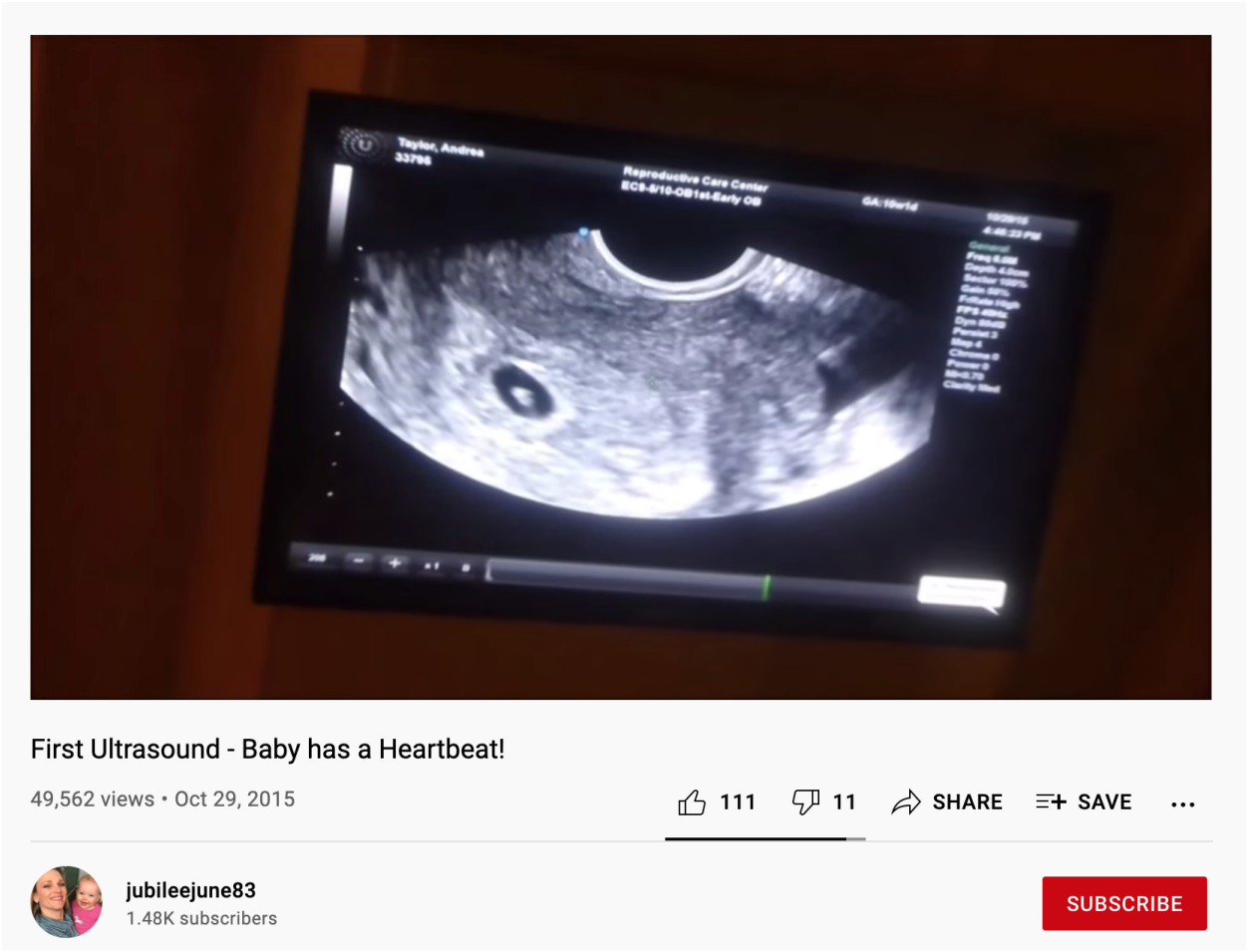


Figure 10: *Jubileejune83* "First Ultrasound-Baby has a Heartbeat!" YouTube, Oct 29, 2015.

The video begins with a moving sound-generated image of a fetus in the center of the frame.[146] The unstable camera shows a disconnection between the recording apparatus and the fetal image. This suggests that we are watching a screen and not a digitized recording of the ultrasound downloaded onto *YouTube*. We are transported into the real-time moment, the office visit. The camera zooms into what looks like black and white static. This reminds us that we are constructing an image from high-frequency sound pressure waves echoed back to piezoelectric

[146] *Jubileejune83,* "First Ultrasound-Baby has a Heartbeat!"

crystals in the transducer with returning echoes turned into electric signals and then to different brightness levels on the computer screen. You can vaguely hear a physician explaining the unidentifiable sound-produced image, annotating it with a digital green marker. At one minute and thirty-three seconds, the camera zooms out to confirm what viewers may have realized initially, which is that we are watching the fetal ultrasound on a screen inside of a doctor's office. This zoom-in, zoom-out, annotation routine repeats itself as the vlog continues. Halfway through the four-minute and twenty-one second video, we begin to hear a whooshing noise suggesting the existence of the fetal heartbeat. We hear an excited and amazed patient in the background. The video ends without any visual of the pregnant person supporting the centering of the fetus. Similar to the argument made by Lauren Berlant in "*America, 'Fat,' the Fetus,"* the centering of the fetus in fetal moving images and their circulation, whether consciously or not, promotes fetal personhood while devaluing the pregnant individual. She highlights a cultural fixation with standard ways of seeing, documenting, and representing images of pregnancy that both babies the mother and invokes citizenship upon the fetus.[147] This political representation is further perpetuated by viewers and users who knowingly and unknowingly participate and strengthen fetal personhood rhetoric.

In user *Brandon Marshall*'s video titled, "Baby 12 Week Ultrasound & Heartbeat," music accompanies images of a fetus with intermittent commentary by a medical professional who describes where the legs are located.[148] The images and text on the screen are relatively

[147] Berlant, *America, "the Fat," the Fetus* (Durham: Duke University Press, 1994), p. 147.

[148] Brandon Marshall. Baby 12 Week Ultrasound & Heartbeat. Sep 10, 2014. https://www.youtube.com/watch?v=Ul0Emv0gVuQ.

incomprehensible to an inexperienced eye. There is no visual representation of the pregnant individual whose body we have seemed to visually enter.

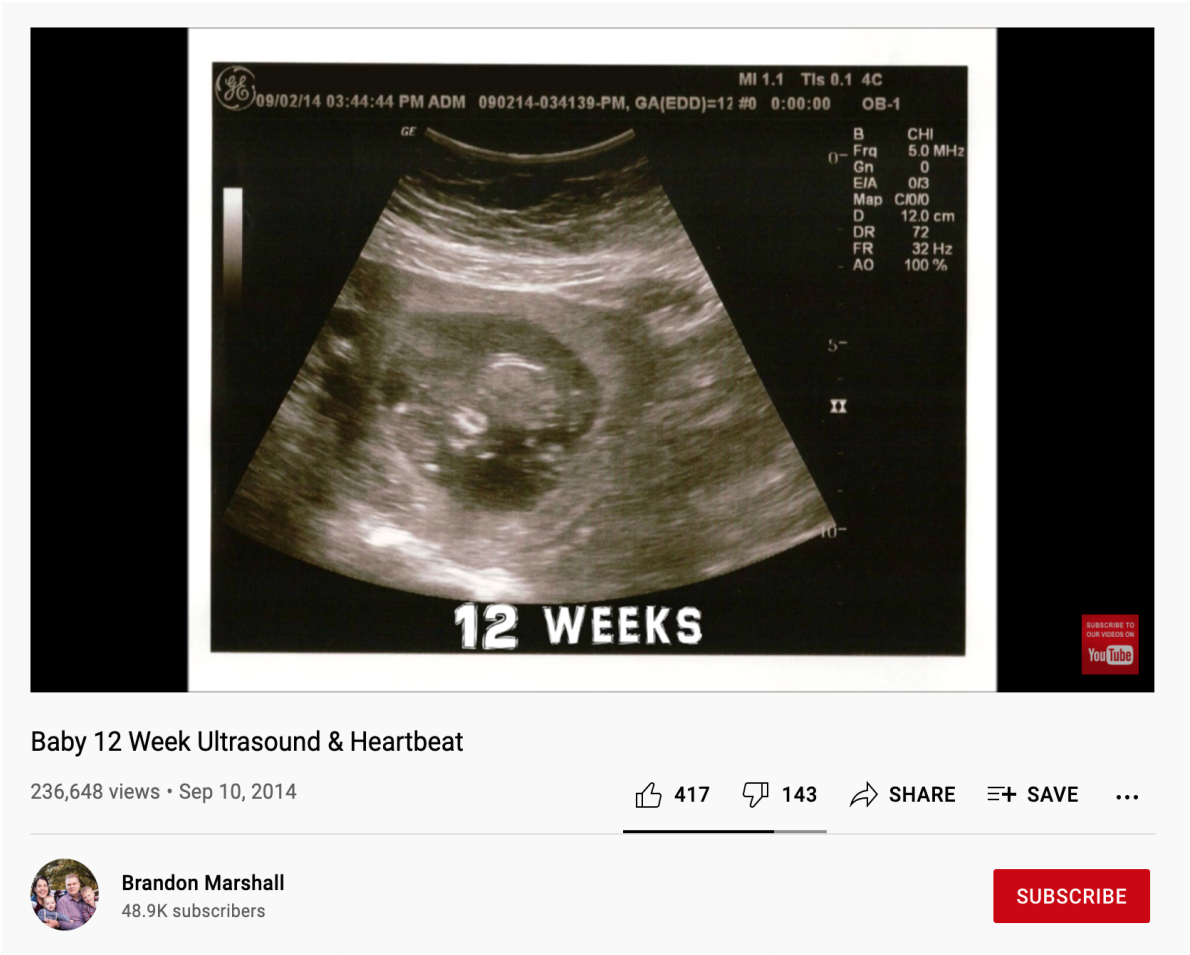
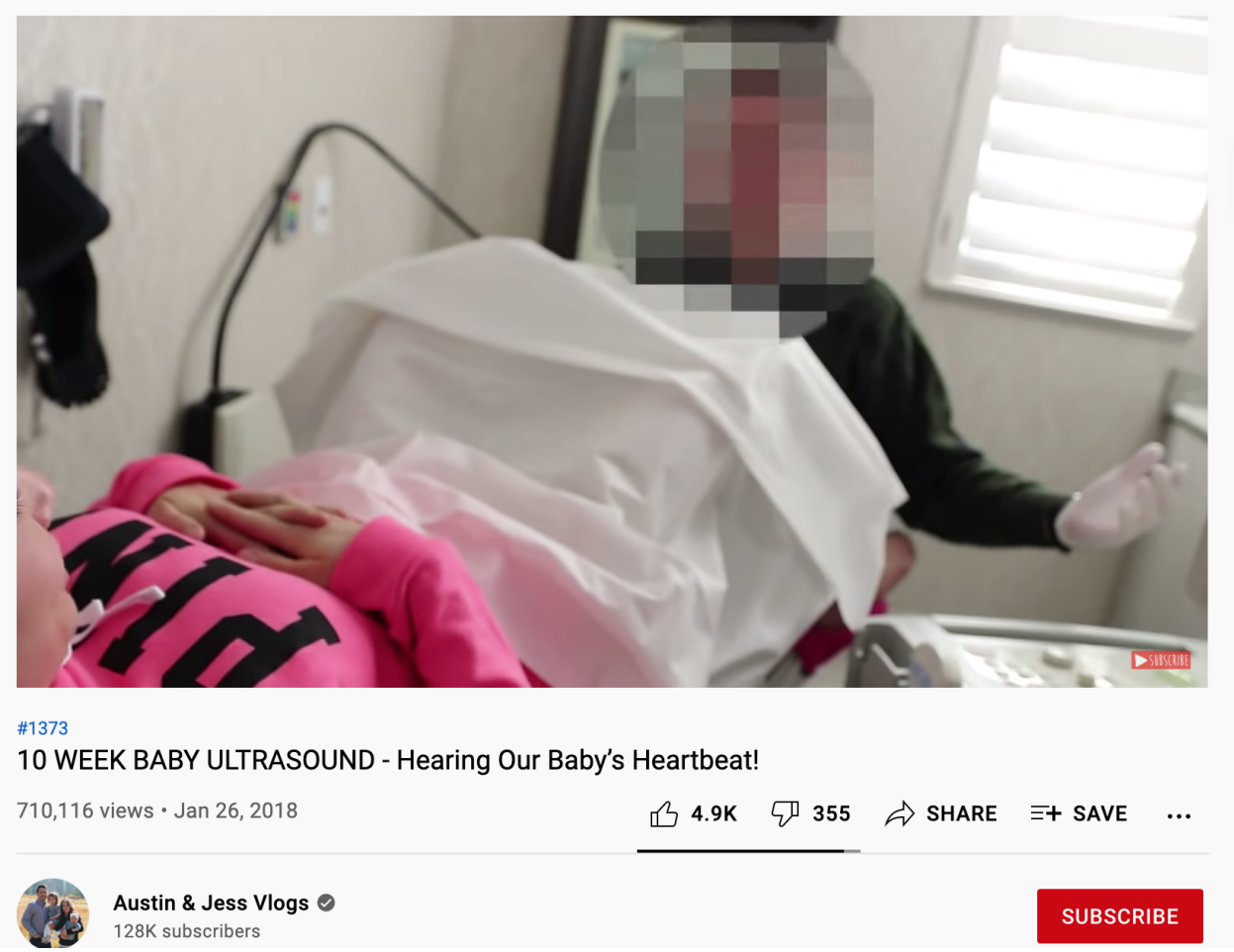


Figure 11: *Brandon Marshall,* "Baby 12 Week Ultrasound & Heartbeat" YouTube, September, 10 2014.

When analyzed through Foucauldian biopolitics, this bifurcation of a patient's body and identity sets the stage for fragmentation that continues to center the fetus and subordinate the pregnant person. At one minute and seventeen seconds, the fetal image is transposed with a text that says heartbeat, translating the sounds that follow, consistent whooshing beats. The video

ends with what looks to be a scan of a printed-out image of the fetus with the text "12 weeks" digitally added.

My third and final case study within this genre is a video published by user *Austin & Jess Vlogs* titled "10 WEEK BABY ULTRASOUND – Hearing Our Baby's Heartbeat!" This YouTube video departs from the other two case studies I consider in that its form is much more biographical with the expecting couple within the diegetic space.[149]



[149] *Austin & Jess Vlogs*, "10 WEEK BABY ULTRASOUND – Hearing Our Baby's Heartbeat!", Jan 26, 2018. https://www.youtube.com/watch?v=qLNcxL_KumI.

Figure 12: *Austin & Jess Vlogs,* "10 WEEK BABY ULTRASOUND- Hearing Our Baby's Heartbeat!" YouTube, Jan 26, 2018.

The video is recorded in a video blog style. Its short format presenting life updates reveals the couple's anxieties, nervousness, and excitement while at the doctor's office. Again, similar to the other two case studies, the couple and online viewers are subject to the professional translation of what is seen in the scientific document. Without a medical translation, we are viewing ultrasonic black and white pixels. The vlog eventually cuts to a second visit, recording documentation of the doctor's visits and the growth of the fetus. Comment on their vlog states, "This is such a heartwarming video! Watching your baby grow is the best feeling! So exciting! Wishing you nothing but the best".[150] This comment reveals the mutually positive aspects to connecting online with other users excited at the prospect of following the growth and documentation of a fetus online. Other comments are eager to predict the gender of the fetus. User *Marissa Seagal* posts, "I predict baby is a girl 🤴❤️." Others interact with the video by commenting on potential baby names. The excitement is felt through the screen but what is ignored is the problematic aspect of integrating gender into the framing of the fetus. The anti-abortion movement often deploys this particular argumentative framing.

This framing implicates an entity with rights reinforced through a humanizing deeply contingent upon its revealed "gender." Knowing the gender often imparts more relatable personhood onto the fetus. The "gender reveal" practice is one of the standard features of the maternal space. It has now incrementally become *controlled* by pregnant women themselves, not wholly by the likes of medical and political institutions. So, while on one side of the coin, there

[150] Comment by *YouTube* account *Kaylee Maldonado*.

is a perpetuation of fetal personhood on social media, on the other is increased social connectivity and opportunities to monetize the documentation and exhibition of one's body. But while a digital community of pregnant women provides a sharing of prenatal experience, it also provides more corporate and state opportunities to surveil such affective sharing.

Without material ownership over one's bodily documentation online, there is significant potential for abuse, as exemplified in situations where individuals considering abortion are forced to view an ultrasound even if not medically necessary.[151] Social connectivity on social media starkly contrasts with the darker implications when data from the documentation of one's body is being aggregated and sold for corporate profit. The hegemonic corporate aspects of YouTube, coupled with its ubiquitous connective use has been discussed by José van Dijck in *The Culture of Connectivity.*[152]

In chapter three of her book, van Dijck details the history of the promise to make the Web both transparent and social by tracking corporate profiting from community-based online spaces.[153] She states, "what used to be informal social activities in the private sphere – friends hanging out together and exchanging ideas on what they like – have become algorithmically mediated interactions in the corporate sphere."[154] This mediation by corporations highlights that the fetal heartbeat sharing phenomenon on YouTube immediately and permanently becomes

[151] Although content creators can usually delete and hide their videos after upload, licensing agreements with Google give up usage rights to content uploaded.

[152] While her chapter on *YouTube* serves as fruitful for this critique, her books' larger discussion about new interactive platforms and their "participatory" and "collaborative" culture provides insight to my analysis.

[153] Dijck, *The Cultures of Connectivity*, 14.

[154] Ibid., 65.

content powered by and owned by YouTube. This means that private documents made public by oneself can both be monetized for oneself and monetized by corporations. The norms for online sociality are not only now making public-private but also allowing for new owners of what was once private, a familiar tenet of our neoliberal society. Van Dijck comes to call this specific form of neoliberalism that monetizes social connectedness "commoditizing relationships."[155] As van Dijck states, "Besides generating content, peer production yields a valuable by-product that users often do not intentionally deliver: behavioral and profiling data. Under the guise of connectedness they produce a precious resource: connectivity."[156] In other words, the relationships between women online, sharing their excitement and anxieties, are inevitably transformed into products. These products are not only valuable to Google but eclipse whatever monetization is available to the uploader. Therefore, the affective-diagnostic is a component of the data mining and user profiling that Google finds financially beneficial. These products, or as van Dijck calls them, resources, these products are resold and reapplied as information to the platform. The information mined from the sociality on YouTube becomes strategically integrated, informing how social activities are designed, branded, and enforced on the platform. As van Dijck emphasizes, this reminds us that sociality and platforms are 'mutually constitutive of one another.'[157] Moreover, ultrasound technology doesn't only reside within the scientific and online context anymore. It is no longer just a vehicle for connection between pregnant people and their bodies but, as evidenced by my dissertation, is now a part of a larger politics of

[155] Ibid., 16.

[156] Ibid.

[157] Ibid., 43.

networked space. This politics of networked space where fetal ultrasounds find themselves is, in theory, not exclusive to one political position but is more often seen, at least in my project, to reinforce anti-choice positions. Because most of the examples I provide in this project present the commodity form of fetal sonograms through the promotion of anti-choice positions, I want to clarify that the commodity form of fetal sonograms can map onto other positions, including parental choice and pro-choice.

Within both scientific and online contexts, ultrasounds pivot attention away from pregnant people and toward the developing fetus. This is done through material framing, or the Foucauldian bifurcation of a patient's body and identity, and discursively through affective and emotional attachment and rhetoric surrounding the fetus. The persistent and centered framing of fetuses in fetal imagery amplifies the document's affective quality, supports fetal personhood, and is paralleled in popular and political culture. One can appreciate their fetal fluids and functions through documentation and still maintain an individual's right to choose. But with the discourse around fetal heartbeat, I wonder if vloggers understand the material ramifications of such 'cultures of connectivity.'[158] This is not to say that they are responsible for anti-abortion legislation or the accumulation of behavioral and profiling data by platforms. Rather, these vloggers of fetal heartbeat videos on YouTube are participating, regardless of intent, within the same discourse as such legislation. This participation extends to vloggers who broadcast their fetal doppler use on YouTube. Through affective engagement, users substantiate conceptions of fetal viability through the notion of fetal heartbeats. Moreover, a similar paradoxical structure is present in this phenomenon where bonding with a fetus is aligned with fetal personhood.

[158] Paraphrasing from the title of Dijck's, *The Cultures of Connectivity*.

Chapter 3: Legitimizing Viability Through Conflict: Portable Non-Medical Fetal Dopplers and Race

Portions of this chapter were published online on September 30, 2019, as awardee research by Shaina Goel for the Center for the Study of Women at the University of California, Los Angeles.

Reproductive monitoring devices are a form of technologically advanced prenatal care within a larger ensemble of medical care technologies for those who can afford them. One of these devices is a fetal doppler used to generate audio through hand-held battery-powered ultrasound devices. Fetal dopplers advertised for laypersons for use at home provide an audio recording alongside its' beats per minute. This audio is most often presumed to be a "fetal heartbeat" and is sometimes accompanied by visuals of a fetus. Products like WuMusic and BabyBeat are bought directly by consumers (without a medical professional) for purely nonmedical reasons. In contrast, like Butterfly IQ+, others are marketed for use by medical professionals and can provide visual images to a smartphone. This chapter considers user engagement with at-home fetal dopplers, sometimes referred to as handheld ultrasound devices, that can be bought over the counter and do not provide images. Instead, they only produce sound and dubiously claim their detection of "fetal heartbeats." Through sound, fetal dopplers, like ultrasounds discussed in chapter two, pivot attention away from pregnant people and towards the developing fetus. As established in the previous chapter, gendered and affective framing of fetuses on YouTube parallel popular political discourses around fetal personhood and protection. By detecting presumed "heartbeats," at-home fetal dopplers assist in calming users' anxieties when a fetus's health is in question. Engagement with these devices is broadcasted on video sharing sites like YouTube, where pregnant content-makers document themselves using the device, sharing their experiences of pregnancy, which include attempts and strategies to find the

"heartbeat" and moments of bonding with their fetus. When documenting themselves using a device that does not provide visual images, content makers make visible their bodies. But in successfully challenging pathological stereotypes of Black maternal care through the substantiation of fetal personhood and fetal heartbeat, they can reproduce normative narratives that are already disproportionately subjugating the Black maternal body.

Moreover, while pregnant people are centered with their anxieties shared and their lived experiences recognized by other users, fetal dopplers on YouTube invoke questions about race and racism concerning documents commonly read through affect. In this chapter, I argue that portable at-home fetal monitoring devices, when used by non-White or pregnant people of color, are an instance of circumventing the medical establishment that centers pregnant people's bodies and provides an opportunity to broadcast prenatal care that opposes pathological stereotypes that have been fundamental in the criminalization of Black pregnant people. Through this argument, I highlight questions such as how do new mechanisms for controlling reproductive rights relate to other histories of racism and maternal-fetal conflict in the United States? How do these understudied YouTube videos normalize and substantiate ideas of heartbeats that are attached to viability and personhood through affective-diagnostic language? And finally, how have affective-diagnostic discourses surrounding care and fetal protection historically been applied to visible Black pregnant bodies?

I analyze fetal dopplers on YouTube because it asks for a different kind of consideration of visibility, specifically the visibility of pregnant bodies. No matter their intention, users broadcasting themselves on YouTube while using this device reproduce "norms of 'good' mothering, including sentimental narratives, representations of self-less mothers, and harmonious

nuclear families."[159] Birthing and pregnancy YouTube videos broadcast a narrative, sentimental moment, or experience that is now open to public view.[160] However, centering attention on a presumed "fetal heartbeat" for viability legitimizes notions of fetal personhood despite its dependence on questionable logic. Some physicians who specialize in fetal health, like OB-GYN and associate professor at the University of California, San Francisco Dr. Jennifer Kerns, find claims that the sound generated from ultrasounds during early stages of pregnancy are representative of fetal heartbeats to be misleading.[161] A lay person's desire to detect a "heartbeat" through an at-home fetal doppler, which is not a medical device, prompts questions about how online reproductive spaces frame cardiac activity and how these seep into other legislative spaces.

[159] Julie Roberts, *The Visualized Foetus*, 115. Roberts is applying the work of R. Longhurst (YouTube: A New Space for Birth? *Feminist Review*, 2009) to discuss pregnancy and birth on YouTube through the interpretation of visual images.

[160] Ibid.

[161] Selena Simmons-Duffin, "Texas Abortion Ban Hinges on 'Fetal Heartbeat.' Doctors Call That Misleading", Sept 3, 2021. https://www.npr.org/sections/health-shots/2021/09/02/1033727679/fetal-heartbeat-isnt-a-medical-term-but-its-still-used-in-laws-on-abortion.

Figure 13: *Live Ultrasounds in Ohio "heartbeat" bill hearing in 2011. Photographed by Jay LaPrete for Associated Press*

Heartbeats have been a linchpin of fetal protection legislation that employ rhetorics of care and compassion for a fetus to excuse the criminalization of pregnant people. While battles over reproductive rights have existed for decades in the United States, the "heartbeat" bills are a new iteration of anti-abortion legislative measures. In 2019 alone, four states passed a fetal "heartbeat" bill prohibiting abortions if a "fetal heartbeat" can be detected. The highly debatable "heartbeat" can be "detected" as early as six weeks into gestation. As Anne North and Catherine Kim explain in a piece for *Vox,* "some reproductive rights groups argue that the term 'heartbeat' bill is a misnomer, since the fetus does not yet have a heart at six weeks' gestation — the cardiac activity detectable at that time comes from tissue called the fetal pole, as OB-GYN Jen Gunter

has written." [162] The legislated collection of visual and audio ultrasound data limits legal autonomy over one's reproducing body. Michele Goodwin writes extensively about the plethora of such legislation introduced in the first half of 2019.[163] She estimates about four hundred antiabortion laws were introduced with more than twelve states debating legislation that would grant constitutional rights to fetuses.[164] In addition to this, state legislatures proposed laws that would criminalize abortion during the first and second trimesters of pregnancy.[165] This legislation enlisted the same legal framing of viability but in terms of a fetal heartbeat, ultimately restricting pregnant peoples freedom of choice to abort. Moreover, the reframing 'possible embryonic cardiac activity' as a fetal "heartbeat" is a fairly new legislative strategy by anti-abortionists to restrict pregnant people's access to abortions at an even earlier stage than was established by *Roe v. Wade* and *Planned Parenthood v. Casey*.[166] Despite the debates over this scientifically unstable new mechanism used by the anti-abortion movement to diminish a pregnant person's right to choose to terminate their pregnancy, these early pulsations have become a normalized and often a sought-after component of modern reproduction.

Like fetal protection legislation, fetal dopplers employ a rhetoric of care and compassion directed at a fetus suggesting that one is using technology to both bond with their fetus and

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[162] Anna North and Catherine Kim. "The 'heartbeat' bills that could ban almost all abortions, explained", *Vox,* Jul 28, 2019. https://www.vox.com/policy-and-politics/2019/4/19/18412384/abortion-heartbeat-bill-georgia-louisiana-ohio-2019.

[163] Goodwin, 76.

[164] Ibid.

[165] Ibid.

[166] Dabney P. Evans & Subasri Narasimhan (2020) A narrative analysis of anti-abortion testimony and legislative debate related to Georgia's fetal "heartbeat" abortion ban, Sexual and Reproductive Health Matters, 28:1, DOI: 10.1080/26410397.2019.1686201

ensure the fetus is alive. What is unique about at-home fetal dopplers is that the absence of fetal imagery forces pregnant content makers to center themselves. This centering is both in the form of personal storytelling and on-camera framings of one's belly and bump.

By considering reproductive monitoring technologies, specifically at-home fetal dopplers, with the history of racism and reproductive labor, this chapter highlights interconnected strategies for controlling reproduction. Black pregnant people using fetal dopplers are an empowering public gesture as they are also publicly self-presenting as "proper" maternal figures through prenatal care implemented to confirm their fetus's health and well-being. But, through language and visual means, they are implicated in the strengthening of narratives intrinsically tied to racist forms of reproductive control. This is evidenced by Black maternal mortality rates and disproportionate criminalization of people of color, both connected to historical and pathological stereotypes. As scholars like Lisa Rosenthal and Marci Lobel have written, many of the stereotypes of Black American Women, uniquely applied to them, date back to images and archetypes promoted during American slavery.[167] Among the more recent stereotypical representations of Black mothers are images of them as welfare queens. "The welfare queen is an image of an uneducated, poor, single Black woman who does not want to work but has many children in order to take advantage of public assistance (Woodard & Mastin, 2005)." In addition to this stereotype, which connects to "images of Black women as "breeders" dating back to slavery (Collins, 2000)", many Black women are perceived to be involved in alcohol or drug use and sexually promiscuous.[168] In publicizing one's regard for their fetus through doppler use, a

[167] Rosenthal, Lisa, and Marci Lobel. "Stereotypes of Black American Women Related to Sexuality and Motherhood." *Psychology of women quarterly* vol. 40,3 (2016): 414-427. doi:10.1177/0361684315627459

[168] Ibid.

pregnant person of color makes their pregnancy visible and challenges pathological stereotypes that they cannot display a proper sense of responsibility. An analysis of at-home fetal dopplers on YouTube allows one to think through this gesture while also highlighting the dangers of fortifying “fetal heartbeats" and centering pregnant corporeality of people whose visibility as pregnant has proven to be problematic.

Fetal dopplers must be read through a more extensive biopolitical history of Black visibility and invisibility, maternal-fetal conflict, and discourses of care with historical lineages to 1662 Partus Sequitur Ventrem, the 1986 War on Drugs, 1990s criminalization of pregnant Black women, and modern fetal heartbeat legislation. As American scholar and social justice advocate, Dorothy E. Roberts states, “the brutal domination of slave women’s procreation laid the foundation for centuries of reproductive regulation that continues today.” [169] I recognize that my chapter’s concern with certain moments connecting the history of maternal-fetal conflict and racism leaves significant gaps in my historical analysis. But through these gaps, I present a larger argument about how affective-diagnostic discourse is present in reproductive biopolitical strategies that sustain different systems of oppression. While dominance over a Black person’s procreation from slavery to drug criminalization has laid the foundation for reproductive control in the United States, I argue that such regulation is no longer confined to Black pregnant people. By reading this biopolitical history through fetal dopplers, I consider the similar affective-diagnostic rhetoric in fetal doppler discourse and recent criminalization efforts highlighting how both engage in fetal health rhetoric and maternal-fetal conflict.

[169] Dorothy E. Roberts, *Killing the Black Body*, 49.

To establish these historical lineages, I begin with two seemingly disparate yet connected case studies. The first documents Regina McKnight, a pregnant Black woman convicted of homicidal child abuse in a landmark case involving stillbirth. The second presents YouTuber Avi Steen who is navigating a complicated space as a pregnant Black woman centering herself while engaging with at-home fetal dopplers through affective-diagnostic language. I connect these two case studies to present how maternal-fetal conflict arises with two different Black women in two different historical and situational contexts.

Regina McKnight: Convicted for a Stillbirth

The first woman to be convicted for stillbirth in the United States was Regina McKnight, a 22-year old Black woman from South Carolina.[170] In 1998, her mother was killed by a hit and run driver.[171] Pregnant at the time, McKnight became homeless and began using cocaine to cope with her grief.[172] In May of 1999, McKnight went into labor and gave birth to her stillborn at Conway Hospital.[173] Immediately following the birth, the hospital tested McKnight. While having signed the Informed Consent for Drug Testing, McKnight, who attended special education courses in high school and had a measured IQ of 72, may not have recognized that this

[170] Ibid., 16. According to Dorothy Roberts in *Killing the Black Body*, South Carolina has the "dubious distinction for prosecuting the largest number of women for maternal drug use", 190.

[171] "Criminalization For Use of Drugs and Pregnancy: Regina McKnight Case Study", *The City University of New York, School of Law.*

[172] Ibid.

[173] "Criminalization For Use of Drugs and Pregnancy: Regina McKnight Case Study", *The City University of New York, School of Law.* Published by the National Advocates for Pregnant Women, (Author and Date Unknown). Date accessed Feb 2022. https://www.ohchr.org/Documents/Issues/Women/WG/DeprivedLiberty/Others/Human%20Rights%20and%20Gender%20Justice%20Clinic%20at%20CUNY%20School%20of%20Law%20and%20others-3.pdf

information would be shared with prosecutors.[174] Months after her stillbirth, and with no prior arrest history, McKnight was arrested and charged with homicide by child abuse.[175] Her medical records and tests were surrendered, without her consent, to the police, forming the basis for the scientifically disputed claim that her stillbirth was a result of her cocaine use.[176]

She was convicted of this charge in 2001 and sentenced to 20 years in prison.[177] In 2008, after serving for almost a decade, she was acquitted due to findings that include but are not limited to the following: prosecutors used unreliable scientific evidence, and her counsel failed to both introduce the autopsy report into evidence and investigate medical evidence that contradicted the State's position correlating cocaine use and stillbirths.[178] The Court's opinion concluded with the following: "This is a very general summary of the expert testimony on the issue and we reiterate that neither expert was claiming that cocaine will not harm a fetus. Rather, the thrust of this testimony was to emphasize the doctors' recognition of recent studies showing

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[174] Ibid.

[175] Ibid.

[176] Goodwin, Michele. "Pregnancy and the New Jane Crow." *Connecticut Law Review* 53, no. 3 (September 2021): 558.

[177] Following her conviction, multiple medical groups concluded that there was no evidence her drug use caused her stillbirth. See Press Release, Nat'l Advocs. for Pregnant Women, Petition Filed Today Seeking U.S. Supreme Court Review of Unprecedented South Carolina Decision Treating a Woman who Suffered a Stillbirth as a Murderer (May 27, 2003). https://www.advocatesforpregnantwomen.org/petition_filed_today_seeking_us_supreme_court_review_of_unprecedented_south_carolina_decision_treating_a_woman_who_suffered_a_stillbirth_as_a_murderer/. See Press Release, Nat'l Advocs. for Pregnant Women, Petition Filed Today Seeking U.S. Supreme Court Review of Unprecedented South Carolina Decision Treating a Woman who Suffered a Stillbirth as a Murderer (May 27, 2003). https://www.advocatesforpregnantwomen.org/petition_filed_today_seeking_us_supreme_court_review_of_unprecedented_south_carolina_decision_treating_a_woman_who_suffered_a_stillbirth_as_a_murderer/, Diana Kasdan, "Victory in the Regina McKnight Case", *ACLU (*May 15, 2008). https://www.aclu.org/blog/reproductive-freedom/victory-regina-mcknight-case, and "McKnight v. State", *South Carolina Judicial Branch*, May 12, 2008. https://www.sccourts.org/opinions/displayOpinion.cfm?caseNo=26484.

[178] Goodwin, 556 and "McKnight v. State", *South Carolina Judicial Branch*, May 12, 2008. https://www.sccourts.org/opinions/displayOpinion.cfm?caseNo=26484.

that cocaine is no more harmful to a fetus than nicotine use, poor nutrition, lack of prenatal care, or other conditions commonly associated with the urban poor".[179]

Prosecuting pregnant people for prenatal drug use was not uncommon following the 1980s. Protections of fetal health have historically served and continue to serve as justification for the policing and criminal punishment of pregnant people, especially poor Black and Brown women.[180] This criminal prosecution, steeped in a larger societal narrative during the War on Drugs, would legalize discriminatory incarceration through the guise of drug use and infanticide, increasing the number of Black offenders. McKnight's conviction presents a problematic centering of a Black woman's pregnant body. The State claimed she did not take proper care of her pregnancy despite her limited access to care, and she was criminalized for it. What happens then when more visible gestures to proper maternal care are broadcasted online by Black pregnant people. With McKnight in mind, publicizing one's at-home care as a person of color is powerful given the statistics of Black maternal mortality rates. Avi Steen, a Black YouTuber who prolifically documents her journey to conceive and care for her fetus, presents an interesting contrast to Mcknight in her social class and how it is gestured online.[181]

<u>At-Home Fetal Dopplers: Connecting with Presumed Fetal Heartbeats</u>

Before the inclusion of a title sequence, Steen is seen saying, "Isn't it cute" in her YouTube video from August 30th, 2018, titled "At Home Fetal Doppler | Finding Baby's Heartbeat!| 8 Weeks Pregnant | Baby #1".

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[179] "McKnight v. State", *South Carolina Judicial Branch*, May 12, 2008.

[180] Goodwin, 549.

[181] I refer to the content maker as Avi which is how she references herself even though her username is Octavia Steen.

> "I am currently, today, 8 weeks pregnant and I, for the past couple of days, have been trying to find baby's heartbeat with the fetal doppler that I bought… [for] my previous pregnancy and so this is what the fetal doppler looks like. Here we go. This is what it looks like, um… comes with a little doppler handle. Turn it on. Can't hear anything of course. But, that's what it looks like. Came with an instruction manual but it really doesn't instruct you on how to do anything. So, I used the YouTube to figure out how to use it and where, you know, I should place it and what not. If you want a video on that let me know."

Figure 14: *Octavia Steen*, "At Home Fetal Doppler | Finding Baby's Heartbeat!| 8 Weeks Pregnant | Baby #1" Aug 30, 2018.

Steen continues to describe the kind of lotion she uses as lubricant for the device and the circumstances for her successful attempt at hearing "baby's heartbeat" that morning.

> "I am so excited because this morning, for the first time, I heard baby's heartbeat. And, I think the reason I haven't been able to hear it, you know, in the previous days, is because I was so bloated. I was doing it in the eve… like in the afternoon and evening and I was really bloated. So I think the gassy… gassy air was kind of covering up the sounds of baby."[182]

Steen's diagnosis of her fetus's heartbeat is within a highly debated discourse that claims ultrasounds can determine and identify a fetal heartbeat. In turn, this discourse feeds into fetal viability determined by medical technology as defined in *Planned Parenthood v. Casey.* Therefore, discourse, legislation, and technology blend to sustain operations to protect fetuses

[182] *Octavia Steen*, "At Home Fetal Doppler | Finding Baby's Heartbeat!| 8 Weeks Pregnant | Baby #1", Aug 30, 2018. https://www.youtube.com/watch?v=8KeSAot-a-E&t=46s. As of January 3, 2022, This video has 22,350 views.

from pregnant people.[183] While less nefarious, Steen engages with the precarity that is fetal heartbeats in a similarly affective-diagnostic manner. Many women engage with fetal dopplers in this way, but what is unique about Steen, who does not frame her use of a fetal doppler through her identity, is her visible engagement excludes the ways Black pregnant people have been dehumanized within the history of Black reproductive control and the present medical, industrial complex.

For most of her didactic YouTube video, Steen is framed in the center of a medium shot. The only noticeable edit is an inserted clip from that morning when she found "baby's heartbeat" and occasional cuts. Steen speaks directly to viewers and offers verbal commentary after presenting footage of the historical event, the "baby's heartbeat" reveal. She speaks directly to the camera for minutes at a time, overjoyed that she found "baby's heartbeat" earlier that morning at only eight weeks pregnant. Steen goes so far as to visually present the box of the fetal doppler she uses, an FD-200 Facelake Fetal Doppler. Unlike another YouTube video of hers engaging with a fetal doppler, a pregnant belly is not featured. Only visible to us are the parts of her body above her upper torso. There is nothing visually indicating to the viewer that she is pregnant besides her commentary and the YouTube title. Moreover, this YouTube video serves to frame her recollecting of that morning when she found "baby's heartbeat" and sharing with viewers specific and individual experiences with this newfound "heartbeat."

[183] For additional cases where pregnant patients are undermined and demeaned to protect their fetus see *Policing the Womb* by Michele Goodwin. Specifically, see pages 91-96 where Goodwin recounts the treatment of Marlise Muñoz, a brain-dead woman put on life support to sustain their fetus, and Angela Carder, who was denied chemotherapy because they were pregnant.

Figure 15: *Octavia Steen*, "At Home Fetal Doppler | Finding Baby's Heartbeat!| 8 Weeks Pregnant | Baby #1" Aug 30, 2018.

She mentions the doppler's instructional manual 'insufficiently instructs and that she sought YouTube as an educational space to learn how to use the at-home fetal doppler'. Additionally, she says the instructional manual stated that one would not find a heartbeat until eleven weeks, but she found hers at eight. Visually striking is the purple FaceLake Fetal Doppler box's central illustration, a white silhouette of a pregnant woman who is assumed to be later in her pregnancy than both eight weeks and eleven weeks by the size of the bump.

After hearing her say she bought the doppler for a previous pregnancy and noticing the title of the video mentions "Baby #1", I figured Steen must have had a failed pregnancy. I

clicked her profile and found a series titled “TTC Journey for Baby #1 | TTC after Miscarriage”. The series includes forty-two videos documenting her journey Trying To Conceive (TTC), beginning with “TTC Journey 2017 | Trusting God in 2018” from Dec 30, 2017, and ending with “TELLING MY HUSBAND IM PREGNANT! (after miscarriage) | Baby #1” on Aug 6, 2018. Through her documentation, I can assume Steen was TTC for over a year.[184] With her miscarriage and journey to conceive in mind, her excitement at hearing her “baby’s heartbeat” through an at-home fetal doppler is understandable.

While Steen’s YouTube video is not predicated on the image of a fetus, fetal sounds, poignant language, and intimate framing all contribute to an affect generating moment operating within the discourse of bonding and, therefore, within the expectations of prepared parenting. But what is not present within this affective, bonding-centric online discourse is her circumventing the traditional hospital setting. This is not to say that Steen bypassed the medical establishment throughout her pregnancy, nor is she consciously using a fetal doppler as a political statement. Instead, I signify this to highlight that this gesture of publicizing one’s at-home care as a person of color is powerful given the statistics of Black maternal mortality rates. These rates leave Steen three times more likely to suffer a maternal death and two times more likely to experience preterm birth and infant mortality than her white content maker counterparts.[185] Therefore, while Steen’s deployment of an at-home fetal doppler allows her to assert and manage her maternity while speaking on her experience with faith to her followers,

[184] In “TTC Journey 2017 | Trusting God in 2018”, Steen discusses how her faith was tested and how she has been TTC for 7 months.

[185] *Octavia Steen*, “Motherhood is TOUGH as a black stay at home mom of 2”, Jul, 1, 2021. https://www.youtube.com/watch?v=Q9h8CKA8b-A. Accessed Feb 3, 2022. Statistics retrieved from Gianna Melillo, "Racial Disparities Persist in Maternal Morbidity, Mortality and Infant Health", *AJMC*, June 13, 2020. This is an overview of a conference session at the American Diabetes Association’s 80th Scientific Sessions.

she has to be read in relation to larger histories and statistics that treat her as invisible in the medical, industrial complex.

Steen engages with a reproductive monitoring device that is emotionally moving and relieves her anxieties given her tumultuous journey to conceive. But, what remains is a profound dissonance between this presentation of pregnancy and maternity on social media and the presentation of pregnancy and maternity that was designated to Regina McKnight. Through Steen's self-presentation on YouTube, I hope to set up some questions related to one's self-presentation as a "proper" maternal figure in opposition to pathological stereotypes of a Black mother. Steen is a woman of faith who self-identifies as a Faith-Based Fertility Coach.[186] Alongside her self-description and having had a prior miscarriage, Steen's publicizing her prenatal precautions is understandable. While the presentations of pathology may differ, both case studies engage affective-diagnostic discourses that value a fetus over a pregnant body, leaving one more visible than the other, revealing an "economy of life" that exists within the space of pregnancy.[187] As Jennifer Terry notes, the "politics of life is closely linked with the politics of death in a discursive circuitry whereby some lives are honored as worthy sacrificial heroes while others are calculated to be expendable."[188] These discourses and logics, in turn, have and continue to excuse, normalize, and authorize security and surveillance measures against

[186] This self identification can be found on her about page on YouTube. https://www.youtube.com/c/OctaviaSteen/about.

[187] In *Attachments to War: Biomedical Logics and Violence in Twenty-First-Century America* (2017), Jennifer Terry explains that the biopolitical logic of such devices resides in their particular "discourses of care" where they not only aspire to improve life but participate in an "economy of life" where some bodies are valued and others are not.

[188] Ibid., 28.

people of color.[189] As evidenced by domestic policing campaigns during the various iterations of the War on Drugs, and looking even earlier to the histories of the Fugitive Slave Acts, pregnant women of color's visibility has historically been linked to their subordination excused by discourses related to fetal health and racist notions of proper care.

Offspring Follows Belly

Partus Sequitur Ventrem, translated to "offspring follows belly," was a ruling from 1662 colonial Virginia that preserved the hereditary descent of enslavement through generations by dictating the matrilineality of enslavement.[190] The 1662 Act presents maternal descent through African women in "language that evokes animal husbandry and property rights."[191] Controlling Black reproduction and procreation through slave women fundamentally sustained slavery, "giving slave masters an economic incentive to govern Black women's reproductive lives." [192] They were so valued as a currency that slave births and deaths were recorded in slaveholder's business ledgers.[193] In 1808, the importing of slaves was banned and slave women's reproduction sustained the entire system of slavery in the United States.[194] While more than a century apart, both U.S. slavery and the 1986 War on Drugs are instances where Black reproduction are

[189] Ibid., 27. Of critical importance to Terry is the manner in which domestic policing, surveillance, and security methods and tactics are appropriated and adapted from military operations and war.

[190] Morgan, J. L. (2018). *Partus sequitur ventrem: Law, race, and reproduction in colonial slavery.* Small Axe, 22(1), 4. https://doi.org/10.1215/07990537-4378888.

[191] Ibid.

[192] Roberts, 47-48.

[193] Ibid., 50.

[194] Ibid.

plagued by institutional frameworks separating a pregnant person and fetus. When a biopolitical framework is applied to an analysis of the 1986 War on Drugs, we are left with another instance where Black reproduction, marred by similar separations that devalued a pregnant person while valuing a fetus, sustains surveillance and criminal justice systems through the prosecuting of women under statutes trying to protect a fetus from improper care.

The 1986 War On Drugs was an anti-drug campaign established during the Reagan administration. Politicians became concerned with a perceived increase in drug consumption in the United States, nationally elevating the issue. The campaign was advantageous to both the Reagan and the first Bush administrations as funding increased for local and federal law enforcement agencies. Additionally, as Sheryl Fett notes, "civil liberties were weakened and the drug war propaganda acted as a catalyst for increased attention to other issues such as pregnant drug users."[195] This inevitably led to the arrests and prosecutions of pregnant women for drug offenses that linked maternal behavior to fetal harm justified through fetal protection laws. "By the mid-1980s most states had passed laws which applied to the wrongful death of the fetus".[196] Regina McKnight was one of the thousands of low-income Black mothers punished based on positive drug screenings that preceded child abuse and neglect proceedings. Through this historical perspective, it is evident that the underlying issue was not Regina McKnight's stillbirth but rather her being a pregnant poor Black woman during the War on Drugs. According to Dorothy E. Roberts, "...child abuse and neglect petitions containing allegations of the mother's drug use quadrupled in New York City between 1986 and 1989, paralleling the onset of the crack

[195] Fett, Sheryl R., "Criminalizing Pregnancy: An Analysis of the War on Drugs and the Fetal Rights Movement" (1994). Master's Theses. 4075. https://scholarworks.wmich.edu/masters_theses/4075, 20.

[196] Ibid., 22.

epidemic."[197] Ten years later, crack exposure was the leading cause of newborn foster placement in the city.[198] Such punitive responses have led States to remove custody of thousands of babies from Black mothers based on solitary drug tests.[199] The public health issue, assisted by news media and television networks, turned into a highly racialized public discourse. The issue, now labeled as specific to Black communities, led to the disproportionate incarceration of the Black population, specifically Black women, for drug-related crimes.[200]

Between 1986 and 1991, non-Hispanic Black women saw their incarceration increase by 828%.[201] The criminalization of women for illicit drug use led to the criminalization of pregnant women for prenatal drug use. A relevant example of this is Jennifer Clarice Johnson, a twenty-three-year-old Black woman, who "admitted to her doctors that she smoked crack shortly before" delivering her son Carl in 1987 and daughter Jessica in 1989.[202] Following her admission, both babies tested "positive for metabolites of cocaine."[203] The Florida State assistant attorney Jeff Dean attempted to argue "that Johnson had passed the cocaine metabolite to her

[197] Dorothy E. Roberts, *Killing the Black Body,* 185-186.

[198] Ibid.

[199] Ibid.

[200] Examples of networks racializing this discourse are presented in Rolison, Garry L; Bates, Kristin A; Poole, Mary Jo; Jacob, Michelle. "Prisoners of war: Black female incarceration at the end of the 1980s", *Social Justice*; San Francisco Vol. 29, Iss. 1/2, (2002): 132. They state, "All three major television networks presented documentaries on crack. CBS's documentary "48 Hours on Crack Street," was watched by 15 million viewers, 'making it the most watched documentary in television history.' *Time* magazine made crack an important cover story, describing the war on drugs as 'America's Crusade' (Thomas et al., 1986; Rosenblatt, 1986). This informational 'blitz' (Belenko, 1993: 24) highlighted the horrors of this drug and intimately associated it with youth and gangs, particularly African-Americans and Latino males *(Ibid.*)." 132.

[201] Mauer and Huling, "Young Black Americans and the Criminal Justice System: Five Years Later." Washington, D.C.: *The Sentencing Project* (October 1995).

[202] Roberts, 188.

[203] Ibid.

babies *through their umbilical cords* after they were born, in the sixty seconds before the cords were cut."[204] Despite significant issues with the State's argument, Judge Eaton found Johnson guilty of "delivering cocaine to her children."[205] She was not sentenced to jail time. Instead, she was sentenced to a year of live-in drug treatment and fourteen years of probation.[206] Additionally, the Judge imposed a significant amount of conditions controlling her personal life, including random drug testing and notifying individuals if she becomes pregnant again. Johnson's case presents the myriad ways drug laws are applied to Black pregnant people. Harsh punishments excused by drug convictions are one small cog in a big wheel for poor Black pregnant people whose modern maternal violations are linked to a legacy of Black maternal invisibility during and after slavery in America. This invisibility refers specifically to their status as protected and equal people with rights and protections.[207]

Prosecuting women under statutes claiming to protect a fetus from improper care is part of a larger biopolitical campaign that values bodies unequally. For Black pregnant slaves, the value was complicated and corporeally separated. As Dorothy E. Roberts contends, slave owners had a dual interest in Black women as child-bearers and workers revealing its own dilemma deep-rooted in pregnant female bondage. "This was a procedure that enabled the master to protect the fetus while abusing the mother…As far as I can tell, the relationship between Black women and their unborn children created by slavery is the first example of maternal-fetal conflict

[204] Ibid., 189.

[205] Ibid., 190.

[206] Ibid.

[207] This specification is important as enslaved Black women were made hypervisible in the economic system of slavery as property and as a means for reproduction.

in American history."[208] This domination over a Black person's procreation laid the foundation for modern reproductive regulation, no longer confined to Black pregnant people, that seeks to protect and value a fetus over a pregnant person.[209] This biopolitical framework that seeks to devalue pregnant people while valuing a fetus, even if the fetus is only heard and not seen, is the affective-diagnostic component to fetal dopplers and the basis of anti-abortion discourse. Devaluing the pregnant person whilst valuing the fetus preserves the fetus.

While there is a significant gap of time between the *Partus Sequitur Ventrem* and Regina McKnight's conviction, forms of institutional violence that dehumanize Black pregnant people persist.[210] This is exemplified by the current instantiation of criminalization under the guise of fetal health. As Roberts states, "studying the control of slave women's reproduction, then, not only discloses the origins of Black people's subjugation in America; it also bears witness to the horrible potential threatened by official denial of reproductive liberty."[211] In "Pregnancy and the New Jane Crow," Goodwin argues that "protecting fetal health continues to justify a broader political agenda, including antiabortion laws such as SB8 and criminal punishment for stillbirths and miscarriages, and its targets are no longer confined to poor Black women. Instead, the latter are now the precedent on which modern political and policing agendas are built."[212] This modern political agenda is dependent on the omnipresent ways that "fetal heartbeats" are talked about

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[208] Dorothy E. Roberts, *Killing the Black Body*, 65.

[209] Ibid., 49.

[210] This gap in time includes America's deep and tragic history of racist eugenics behind the ungendering and sterilization of Black women. See *Intimate Justice: The Black Female Body and the Body Politic* by Shatema Threadcraft (2016).

[211] Roberts, 49.

[212] Goodwin, 543.

and accepted online. These spaces are also not confined to white pregnant people despite the fact that reproductive-assisting technologies are most commonly used by white people.[213] While Black pregnant people are reluctant to use advanced reproductive-assisting technologies like in vitro fertilization, some publicly use reproductive-monitoring technologies like fetal dopplers, which do not necessitate a physician and can be applied by oneself to oneself.[214]

At-home fetal dopplers videos on YouTube redefine the possibilities of reproductive technologies outside the medical, industrial complex with their powerful engagement with "heartbeats" in the home, sanctioning of specific kinds of parental preparation, and their employing rhetoric of care and compassion, which together exacerbate inequalities and excuses the criminalization of pregnant people. Unlike medical fetal dopplers, non-medical fetal dopplers are inexpensive. They can be bought online for recreational purposes, and do not present fetal images prompting content makers to visually center their own bodies. With attention to a handful of content makers who engage with non-medical at-home fetal dopplers, I conclude my chapter arguing that portable fetal monitoring devices, when used by non-White or pregnant people of color, are a powerful instance of circumventing the medical establishment that forces their corporeal centering. This centering provides an opportunity to broadcast prenatal care that opposes pathological stereotypes that have previously been fundamental to the criminalization of Black pregnant people during and following the 1986 War on Drugs.

At-Home Fetal Dopplers

[213] Roberts, 284-286.

[214] Ibid.

Portable fetal dopplers are widely available as both medical devices and consumer products, with each device, depending on its capabilities, participating in discourses of fetal personhood in both differing and overlapping ways. Some of the device names include the terms "baby" instead of "fetus," implying that once a heartbeat is detected, a fetus immediately transforms into a baby. Searching on YouTube, one can find hundreds of instructional videos to help users find their "baby's" heartbeat using a "Baby Doppler". These devices, unlike the medically sanctioned use of the Butterfly iQ+, do not have imaging capabilities. Instead, users rely on these devices to measure the heartbeat of their fetus translated into a number on the screen. While they cannot see any imagery of their internal organs, they hear them. Similar to how an ultrasound operates, fetal dopplers use a handheld ultrasound transducer to detect internal fluctuations in the body with current advanced Dopplers using pulsed-wave scanners for measurement.[215] "The pulsed-wave scanners operate by transmitting and receiving a series of pulses, and the frequency shift can be obtained using the relative phase changes of the pulses."[216] Although not inherently a visual technology, at-home fetal dopplers have relocated to social media translating back to a visual medium.

Instead of the black and white sound-generated image, the focal point is a pregnant person's bump. The absence of fetal imagery encourages pregnant content makers to center themselves, their embodied experience, and the portable device. Pregnant content makers created another YouTube sub-genre characteristic of the tutorial format. An inquiry into fetal doppler vlogs on YouTube reveals a plethora of white users who also use the device. This is unsurprising

[215] Alnuaimi, Saeed Abdulrahman et al. "Fetal Cardiac Doppler Signal Processing Techniques: Challenges and Future Research Directions." *Frontiers in bioengineering and biotechnology* vol. 5 82. 22 Dec. 2017, doi:10.3389/fbioe.2017.00082
[216] Ibid.

considering advertisements for fetal dopplers routinely promote white couples, bellies, and bumps. Some of these users guide their viewers through the various ways to find their "fetal heartbeat" using at-home portable dopplers sharing personal stories about why finding a "heartbeat" is so important to them. With the device in hand, content makers explain device placement and the bodily nuances that can help them in operating the device. The explanatory narrative form is evident in the following partial transcript from "FINDING BABIES HEART BEAT AT 10 WEEKS!" published by user *GreenLikeTheColor*.

> "I've been looking for this baby's heartbeat for probably about two weeks and I have been lowkey freaking out that I cannot find this baby's heartbeat. So, at nine weeks… the anxiety set in really really bad just because, my last miscarriage, the baby had passed at nine weeks and we couldn't hear the heartbeat. So I started looking for it at nine weeks and I know it was really early, but I started looking and I couldn't find the heartbeat. I had many, many nights where I was crying and freaking out and about to call my doctor so that we could have an ultrasound but I just held on and pushed through…ten weeks exactly I was laying out on the couch… and I came across my baby's heartbeat. And, I couldn't believe it. I was looking in a spot where I didn't think the baby was but this baby is actually a lot higher than I thought it was. So, I did some research and I watched a couple of videos and a lot of women were looking… right on top of their pelvic bone…my babys not on my pelvic bone or near my pelvic bone. He or she is up more near my belly button".

The content maker continues to state that while this is not a "how-to" video they do have some tips that might help others use their fetal doppler. *GreenLikeTheColor* proceeds to perform the fetal doppler on camera centering their lower belly covered in aloe vera gel. While their tips are not detailed in instructions, as the comments suggest, they seem to help other pregnant people hoping to find their presumed fetal heartbeat. One user confirms this stating, "Hi! I came across your video as I was looking for tips on how to use the doppler! Did what you showed and heard the baby's heartbeat for the first time! I'm 10w3d. Thank you! Hope everything's going great with you and your kids." Another user, Sierra Kieffer, comments that the video helped her as

well. “Thank you for posting this! I always have trouble finding my babies this early on and I found him or her in the exact spot you found yours! Thanks!” It doesn’t take much scrolling to find a couple comments that reiterated the same sentiment. The instructional component clearly assists many pregnant people at home in navigating the doppler on their own body, but I didn’t anticipate comments sharing that they too had a miscarriage at nine weeks. User Jessica Wilcox comments, “Thank you for this video! I am 11 weeks and haven’t been able to find the heartbeat. I also had a miscarriage at 9 weeks last time so it’s been troubling me. But after your reassurance and trying again, I found it very briefly but it was there!” Not only does it seem that the fetal doppler itself alleviates anxiety, especially for people who have had prior miscarriages, but the community-centered YouTube tutorials work in tandem with the reproductive monitoring device to empower the status of a presumed heartbeat that seems to suggest a fetus is not only alive but in fact, a baby. But as some professionals and even online commenters suggest, what is heard may not actually be a fetal heartbeat and what is seen may not actually be safe. In general, it is often debated, but especially with an at-home doppler device, whether what one hears is one’s own heartbeat, a fetal heartbeat, vibrations of the placenta, or a grouping of cells with electrical activity. Despite the absence of a visual component, claims of a technologically mediated fetal-parent bonding still persists.

In the comments, user *Lisa Sallery* writes:

> “Please don’t use a Doppler!!!! I trained as a midwife and it’s difficult at the best of times for a trained midwife. As you already said it gave you anxiety. But it’s not easy to find a heartbeat early in pregnancy. The baby can not physically be by your belly button. If you start looking for the heartbeat and think you’ve found it. This can prevent women going into the hospital or to a midwife. You see when it was at 170’s. That’s the machine picking up your own heartbeat and it bounces through the fluid which doubles it and makes it look like it is fetal. This is very dangerous to do. Don’t encourage others to do this. Please.”

While not commonly found on videos like that posted by *GreenLikeTheColor*, *Lisa Sallery's* comment speaks to criticisms within the medical discourse, specifically the Food and Drug Administration and published medical journals, on relying on at-home reproductive monitoring devices. The impact of such dopplers on everyday consumers has been critically neglected.

The FDA strongly urges consumers to stay away from non-prescribed use of these devices. They state, "The long-term effects of tissue heating and cavitation are not known. Therefore, ultrasound scans should be done only when there is a medical need, based on a prescription, and performed by appropriately-trained operators".[217] Of particular importance is their acknowledgment that these medical devices, when used outside the medical sphere, are predominantly being used for increased bonding. "While FDA recognizes that fetal imaging can promote bonding between the parents and the developing fetus, such opportunities are routinely provided during prenatal care."[218] But the FDA's statement assumes two things. First, that all pregnant people have sufficient access to prenatal care; second, all pregnant people trust medical institutions for their prenatal care. They fail to recognize that this intervention, by oneself for oneself, makes sense for pregnant people of color given a history of malpractice and medical practitioner negligence that leads to increased Black patient mortality and injury. When considered through "the history of sickle-cell screening, the Tuskegee syphilis experiment, and other medical abuses" many Black people have a "well-founded distrust of technological interference with their bodies and genetic material at the hands of white physicians."[219] As

[217] "Avoid Fetal 'Keepsake' Images, Heartbeat Monitors", https://www.fda.gov/consumers/consumer-updates/avoid-fetal-keepsake-images-heartbeat-monitors, Dec 16, 2014.

[218] Ibid.

[219] Roberts, 285-286.

Dorothy Roberts' research makes clear, this distrust is evidenced by Black people who often request "high-tech life-sustaining treatment for a hospitalized family member" and rely on "technological intervention even in the face of a physician's recommendation to discontinue treatment because of a distrust of the doctors' appreciation of their loved one's life."[220] This pattern of wariness towards the medical establishment may be one of many reasons why pregnant people of color decide to use non-medical at-home fetal dopplers.

Figure 16: *Sarah Latouche.* "FINDING BABY'S HEARTBEAT AT 13 WEEKS | SIMPLE TIPS AND TRICKS" June 26, 2020.

[220] Ibid.

Figure 17: *Octavia Steen*, "Listening to Fetal Doppler Sounds at 10 Weeks Pregnant | Trying to find the fetal heart rate for baby #2" Dec 9, 2019.

The pregnant people of color who I highlight, like Avi, do not frame their use of the device through their identity, however, they may identify. *Sarah Latouche*'s YouTube video, "FINDING BABY'S HEARTBEAT AT 13 WEEKS | SIMPLE TIPS AND TRICKS," begins with a teaser one camera still shot of her laying as she monitors what she calls "baby's heartbeat" measuring it as being 158 beats per minute.[221] A title sequence, almost like opening credits, is accompanied by music. It reads, "Sarah Latouche" and is followed by her Instagram handle highlighting her video's relationship to her personal brand. Following the title sequence, Sarah sits on the ground, centrally framed in a medium shot addressing her viewers. She states, "hi friends, it's Sarah. Welcome back to my channel" an established formality in line with learned habits and rituals of video blogs on YouTube. She begins the video excitedly explaining that in

[221] Sarah Latouche, "FINDING BABY'S HEARTBEAT AT 13 WEEKS | SIMPLE TIPS AND TRICKS" June 26, 2020, https://www.youtube.com/watch?v=Hqu7CQav3tk&t=174s. Accessed February 27, 2022.

this vlog she will be finding “the heartbeat”. Specifying the particular fetal doppler she will be using, a Sonoline B Baby Doppler, Sarah picks up the doppler and its’ box to show the camera.

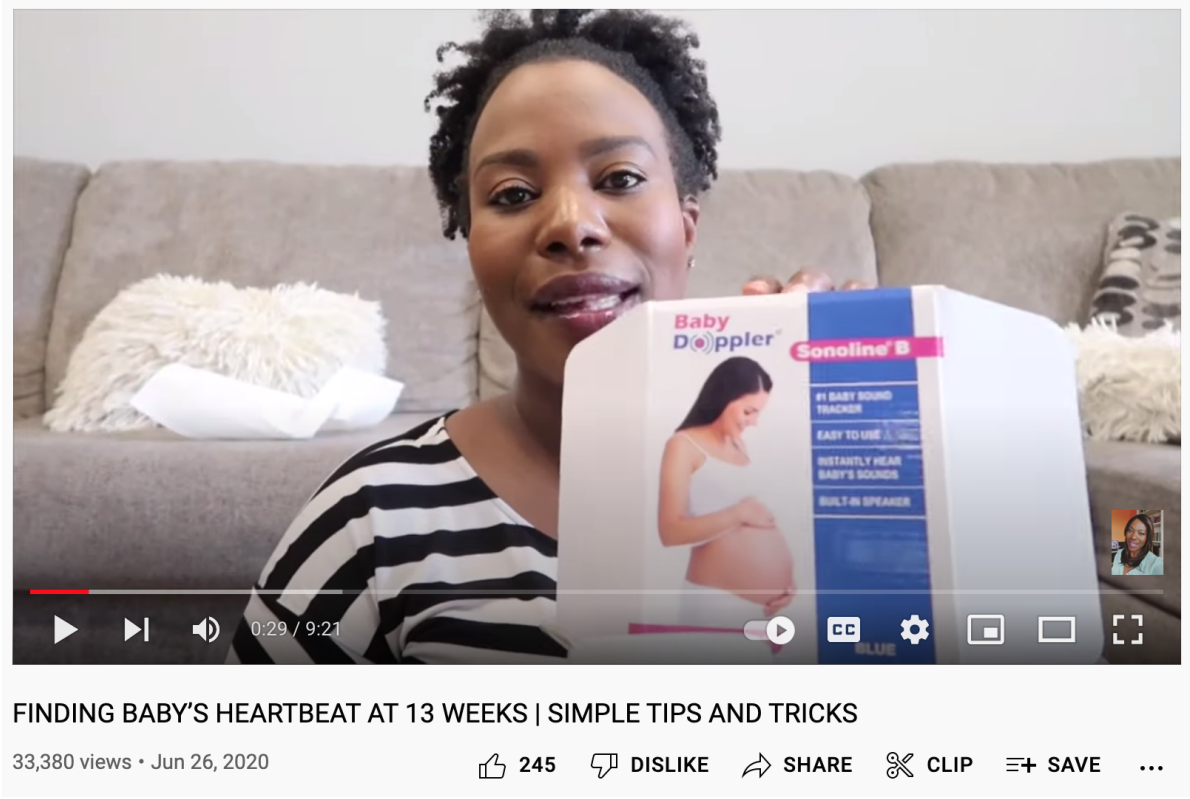

Figure 18: *Sarah Latouche.* “FINDING BABY’S HEARTBEAT AT 13 WEEKS | SIMPLE TIPS AND TRICKS” June 26, 2020.

Retailing at around sixty US dollars, the Sonoline B is sold in a white box that includes the following product facts: “#1 Baby Sound Tracker,” “Easy to Use,” “Instantly Hear Baby’s Sounds,” “Built in Speaker”. To the left of this text is an image of a pregnant white woman dressed in white holding and smiling at her belly. Again, while I am not a medical expert, an educated guess would put her pregnancy in its third-trimester. The advertising strategy of

dressing a white woman in white while producing a loving sentiment towards a revealed third trimester belly seems to be the recipe for fetal doppler promotional material.

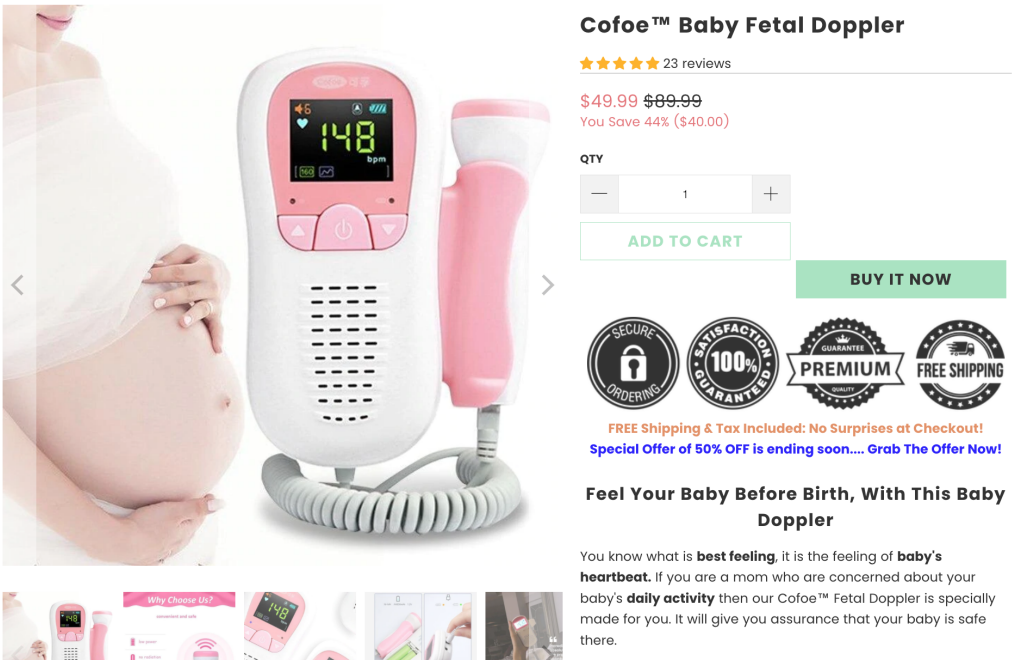

Figure 19: *Proactive Baby,* Cofoe™ Baby Fetal Doppler

Figure 20: *Sears,* Contec BABYSOUND A Pocket Prenatal Fetal Doppler, Baby Heart beat Monitor, LCD, Free 1 GEL

As the title of Sarah's vlog confirms, she is thirteen weeks pregnant which means she is using the fetal doppler in her second trimester. She describes buying it to use as early as week eight but that this proved difficult. "I thought I found it rather easily but it was my own heartbeat, so I was spooked by that. So if you have one of these… you have to be aware that when you hear the first beat it's probably not the baby. It's gonna be yours…yours is a lot slower than the baby's."[222] As I have mentioned earlier in this chapter, this is an accurate spotlighting. The acknowledgment of one's own heartbeat as being present in this technological dynamic is a basic element of Sarah's empowering and subversive gesture as she records her self-examination. She is subversive in her use of a device advertised predominantly to white women and, through her educated and informed control over her care, presenting a counternarrative to the pathological stereotypes of

[222] Ibid.

black pregnant people. Moreover, this particular aspect of Sarah's engagement with YouTube is more consistent with the early, and yet since demystified, conceptualizations of YouTube, and technology in general, as empowering and liberating for women.[223] She is engaging with technology steeped in racial capitalism and participating on YouTube in putting forth a counter-narrative that lay in the broadcasting of this new way of seeing, in tandem, a Black pregnant person and a fetal doppler.[224] Like Sarah, Avi Steen also subverts conventions in broadcasting her use of a fetal doppler and her ability to differentiate between the two sounds produced from her internal organs.

In Avi Steen's second fetal doppler vlog, Avi, who is ten weeks and two days pregnant at the time, guides viewers through her use of a portable fetal doppler. She immediately identifies what she states is her own heartbeat. Following this are minutes of silence as Steen reorients the device. The video features multiple cuts, so it is difficult to assess how long it is until she hears what she calls "baby's heartbeat." Once she finds "baby's heartbeat," she states the heart rate, but it continues to jump. Initially, it was around 140. A second later, it is at 132, then 131, then 130 then finally jumping to 160. She seems unphased by these significant shifts in bpm ending the vlog stating, "but sounds like a strong beat to me."[225] At thirteen minutes and thirty-seven seconds, when Steen states the 131 beats per minute, she edits in an intertext asking viewers to ponder whether the fetal heart rate indicates a boy or a girl.[226] Steen's text insertion on a fetal

[223] A historical relationship between women and technology is discussed in detail by Judy Wajcman. See Wajcman, Judy. *Feminism Confronts Technology*. University Park, Pennsylvania: The Pennsylvania State University Press, 1991, 13.

[224] Ibid.

[225] Octavia Steen, "Listening to Fetal Doppler Sounds at 10 Weeks Pregnant | Trying to find the fetal heart rate for baby #2", Dec 9, 2019, https://www.youtube.com/watch?v=idmiZT7Dx0o.

[226] Ibid.

doppler YouTube tutorial provokes viewers to deliberate on the gender of her fetus while hearing a regularly repeating whoosh associated with the fetus's heart.

Figure 21: *Octavia Steen,* "Listening to Fetal Doppler Sounds at 10 Weeks Pregnant | Trying to find the fetal heart rate for baby #2," Dec 9, 2019.

Steen's text insertion is actually doing more than asking viewers to multi-task. It is directly asking viewers to make a gender delineation based off of the whooshing sounds. And they do just that. One commenter, *Kristina ruiz,* writes "im going to say its a girl", while user with an account that was inactive at the time of writing says the opposite, "Definitely a boy!!!! 💙💙💙🚹🚹🚹".[227] This affective-diagnostic framing of the audio and visual serves to naturally connect a heartbeat with gender in such a way that further substantiates fetal personhood. The use of technology is fundamental in establishing this connection and given Steen's prior miscarriage, it is understandable that she would use a relatively inexpensive

[227] Ibid.

technological device to reassure herself without going to a physician's office. Steen's affective connection to her fetus and her projected reassurance of its health are only possible because she, and others on and offline, have learned to treat sounds produced through the doppler as semiotic objects. While reading sounds and images produced from fetal dopplers and fetal ultrasounds as a sign of protected life relates to legislation limiting a pregnant person's reproductive freedom, in the context of reading a Black fetus and reframing Black pregnant people's visibility, this gesture prompts an important appeal made to the relevance of Black visibility and Black maternal life. This sentiment is signaled by many organizations focused on advocating for increased research on Black maternal health. *Black Mamas Matter Alliance,* a Black women-led cross-sectoral alliance, is one of these organizations devoted to advocating for advanced research and empowerment around Black maternal health before, during, and after pregnancy. Additionally, efforts to raise awareness and shift cultural perceptions around Black fetal and maternal health and visibility are being facilitated inside medical spaces by individuals like Chidiebere Ibe, a Nigerian medical illustrator. Ibe draws informative medical illustrations that include conditions like Sickle Cell Disease, skin conditions like Vitiligo, and basic bodily anatomy of the lymphatics of the female breast. All of his illustrations represent anatomical components through Black skin, which confronts viewers with how whiteness is consistently centered beyond treatment in the medical, industrial complex. Ibe, who has been illustrating since July of 2020, went viral in December of 2021 for his illustration of a Black fetus in the womb.[228]

[228] Desmond Brown, "Illustration of Black fetus has Canadian parents, educators calling for diversity in medical resources," CBS News, Dec 8, 2021. https://www.cbc.ca/news/canada/hamilton/black-fetus-illustration-1.6277131?scrlybrkr=21475121.

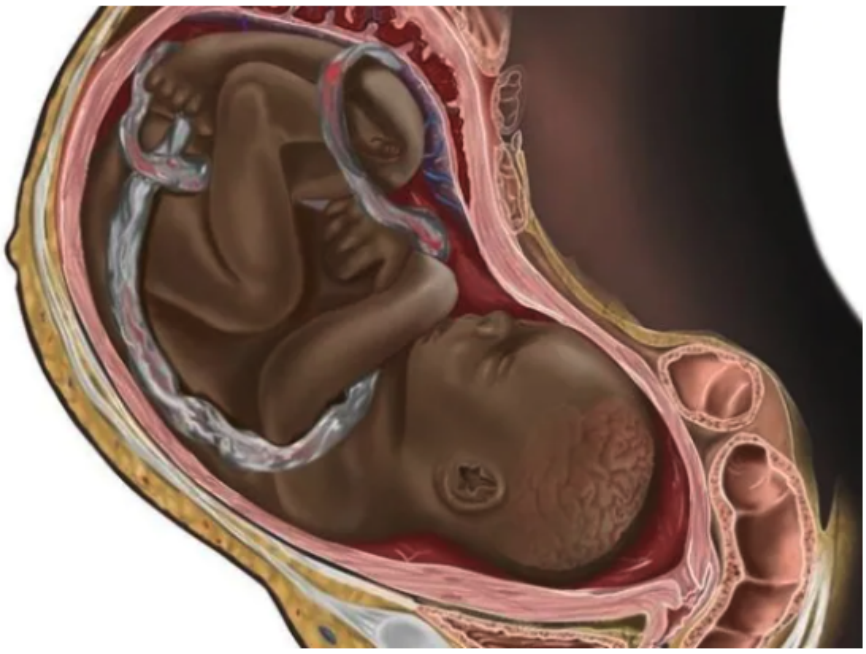

Figure 22: Illustration of a Black fetus inside the womb by Chidiebere Ibe

The illustration struck a chord with social media users who never considered the visualization, or lack thereof, of a Black fetus in medicine, calling upon the importance of preserving and representing Black life. Ibe's illustration features a Black fetus nestled in the womb of a Black person, a potent reminder of this chapter's sentiment: certain life is represented as worth preserving and certain life isn't. While Ibe's form of recognition and advocacy is new, awareness put towards and investigations into how to visualize Black visibility are not new. An early example of this is W.E.B. Du Bois' 1920's monthly magazine titled *The Brownies' Book,* an effort to normalize and celebrate Blackness to Black children. While a diverse and persistent endeavor reflected in and outside of medicine, Black visibility in this chapter has held many paradoxes. Through a focus on Black visibility and fetal dopplers on YouTube, this chapter is interested in the empowering and visualizing aspects of broadcasting oneself on YouTube. This

chapter also considers how YouTubers may not consciously participate in the same rhetoric as that of fetal heartbeat bills, but they do similarly posit that sound produced from reproductive monitoring technology signifies a gendered baby worth protecting. The connection between fetal dopplers and fetal heartbeat bills is their common affinity to fetal heartbeats and this semiotic and sociological approach to sound. It is only because listening and viewing audiences accept this sound as a social, cultural, and political representation of a baby that legislation can successfully claim objective and subjective interpretations of the sounds. It is also because they accept this sound like a "heartbeat" that it is strategically positioned to promote maternal-fetal conflict for the sake of fetal personhood. Therefore, it is another period on a timeline mapping moments where biopolitical power intersects with reproduction. These historical moments make it clear that power over fetal rhetoric translates into strategic power over pregnant bodies. Whether through matrilineal descent, stereotypes of pathologized pregnant people of color, or fetal heartbeats, biopolitical control over pregnant bodies comes in different forms justified by diverse affective-diagnostic strategies.

Conclusion: Fetuses Off of YouTube

The album *Sounds of the Unborn* sounds like glitchy, experimental, dark ambient noise to an untrained ear. Accompanied by electronic gurgles and dissonant chords, the ten-track album is spooky with abrupt and unfamiliar synthesized noises, sometimes resembling TV static with eerie reverb. Released on April 2, 2021, by the label Sacred Bones Records, this was the first album recorded by a fetus. Elizabeth Hart, pregnant in their third trimester, and their partner Iván Diaz Mathé produced and recorded the album by connecting electrodes to Hart's belly to measure electromagnetic impulses produced from their fetus' in utero movements.[229] These impulses were translated through bio sonic Musical Instrument Digital Interface (MIDI) technology.[230] In other words, audio produced from their fetus's vibrations travels via electrodes through MIDI, a technology that transcribes the vibrations into nodes that hold information. These nodes were fed through Diaz's synthesizers, which ultimately gave the original audio its final form and ethereal atmospheric sound. Through a brief consideration of this album, its' production techniques, framing, and the subsequent ways its been received on YouTube, I finalize my dissertation's argument reiterating another counter to the biopolitical history of ultrasonography I rehearsed that continues to feed into anti-abortion discourse. The album *Sounds of the Unborn* illustrates the aestheticizing of a fetus on social media through creative applications of ultrasonography that connect to notions of fetal personhood I have mapped out throughout this project. But, it also presents online spaces where users and commentators

[229] Mosley, Tonya; Muhammad, Jeannette "Luca Yupanqui's *Sounds of the Unborn* Was Recorded Before She Was Even Born". *WBUR*. February 17, 2021. Accessed March 7, 2022. https://www.wbur.org/hereandnow/2021/02/17/sounds-of-the-unborn-album.

[230] "Luca Yupanqui: Sounds of the Unborn- Sacred Bone Records", Accessed March 7, 2022. https://www.sacredbonesrecords.com/products/sbr270-luca-yupanqui-sounds-of-the-unborn.

co-produce a kind of counter-discourse that anticipates a more transgressive kind of activity that is happening on other social media platforms like TikTok. Moreover, this dissertation lays the foundational groundwork that is needed to continue assessing how digital technologies are complicit in co-producing new rhetorics that also challenge the affective-diagnostic strategies I have presented throughout this project.

Figure 23: Photo, taken by Naomi Fisher, of Elizabeth Hart with electrodes connected to their belly during the recording of "Sound of the Unborn"

Like most albums, tracks from *Sounds of the Unborn* are featured on YouTube. Some tracks, like V4.3 pt. 2, have official music videos on YouTube. V4.3 pt. 2's music video bears 125,075 views, 2.3k likes, and 412 comments.[231] As seen from the comments, many viewers sincerely enjoy the ambient noise but most playfully poke fun at the absurdity of it all. While Sacred Bone Records cites that both Hart and Diaz edited "respecting the sounds as they were produced, trying to intervene as little as possible, allowing Luca's message to exist in its raw form," many commenters disagree. Some highlight that most of the work came from producers and synthesizers.[232] *Dholl synth music* comments, "The sounds are great, but let's be honest it's the synth (and their programmer) doing the legwork here. Interesting gimmick tho', gets people to think about the womb-ambience from the not-yet-baby's perspective…"[233] Whether a gimmick or not, the publicity that Hart, Diaz, and Sacred Bones Records agreed upon identifies Luca in often conflicting ways. Sacred Bones Records states the album:

> is the expression of life in its cosmic state — pre-mind, pre-speculation, pre-influence, and pre-human. It is the first album created by a person while they were still inside the womb, the expression of a soul that hasn't yet seen the light of day nor taken a single breath of air. It is a message that comes from a different realm, a sublayer of our existence.[234]

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[231] *Sacred Bone Records*, "Luca Yupanqui - V4.3 pt. 2 (Official Music VIdeo), Feb 2, 2021, https://www.youtube.com/watch?v=90g9Vqvx3yg&t=152s.Accessed March 7, 2022. This quantitative data was retrieved March 8, 2022.

[232] "Luca Yupanqui: Sounds of the Unborn- Sacred Bone Records", Accessed March 7, 2022. https://www.sacredbonesrecords.com/products/sbr270-luca-yupanqui-sounds-of-the-unborn.

[233] Comment accessed from *Sacred Bone Records*, "Luca Yupanqui - V4.3 pt. 2 (Official Music VIdeo), Feb 2, 2021, https://www.youtube.com/watch?v=90g9Vqvx3yg&t=152s.Accessed March 7, 2022.

[234] "Luca Yupanqui: Sounds of the Unborn- Sacred Bone Records", Accessed March 7, 2022. https://www.sacredbonesrecords.com/products/sbr270-luca-yupanqui-sounds-of-the-unborn.

The incongruous description of Luca as a person who is pre-human resembles the complexities of applying descriptive, affective language to a fetus. Like many of the case studies this dissertation has considered, using a biosonic device to produce this album serves as an affective-diagnostic liaison communicating Luca's message to the outside world with technology routinely used in diagnostic medicine. This album and its publicity is another instance of affective-diagnostic language attached to biopolitical technology, fundamentally allowing for the attachment of personhood to Luca who was at the time a fetus. The proximity of this project to current fetal rhetoric and anti-abortion discourse is not unnoticed by commentors on YouTube. *Christopher Krol* says, "Pro-lifers bumpin this every day." A comment from *Nate* states, "this just made more pro-choice." These featured comments are just two of more than a couple dozen satirical comments poking fun at the serious way in which Hart and Diaz position themselves. *Christopher Krol* and *Nate* more specifically poke fun at Hart and Diaz's proximity to anti-abortion rhetoric and reproductive legislative discourse. While this dissertation has been most concerned with the less facetious parts of online engagements with fetal discourse and fetal ultrasounds, it is important to highlight that fetal rhetoric on and off of YouTube is not monolithic. In fact, it is a highly disordered biopolitical space simultaneously containing conflicting ideological spaces where fetuses are actively affectively bonded with and satirically rejected, where some fetuses are making albums while others are testifying in court and achieving legal protections. I conclude this dissertation with a summary of my findings concerning the myriad ways in which fetal ultrasounds are circulating on YouTube while implicated in a larger biopolitical narrative.

Chapter one presented the history of ultrasonography, beginning with submarine warfare and moving into the inaugural use of ultrasounds in reproductive medicine to historicize the affective-diagnostic use of fetal images. Analyzing Lennart Nilsson's *Life Magazine* spread, I highlight how fetal representations have permeated popular culture, inevitably contributing to how we think about protected life and when it begins. Through this analysis of fetal ultrasounds and rhetoric in popular culture, I argue that biopolitical discourses attach feelings, emotions, fantasies, and ideals to fetal imagery, which is directly linked to why many pregnant people share their scientific documents online, broadcasting their fetus to the world. Moreover, the tool's relationship to visibility is why people *see* a fetus from the technological rendering that captures sound wave data and translates it into an image. This way of seeing is learned and reflected on social media video-sharing websites like YouTube.

In chapter two, I consider intimate feelings of connections to fetal ultrasounds broadcasted on YouTube. Beginning with my mother's fetal ultrasound image, I consider the various ways in which intimate engagements with fetal ultrasounds contribute to our understanding of a fetus and fetal personhood. I do so primarily through user-generated content that purports to reveal the gender or personhood of a fetus through ultrasound technology. I identify generic conventions of this phenomenon that create a sense of abstraction, allowing viewers to conceptualize a fetus as a detached spectacle. With Foucauldian biopolitics in mind, I consider ideological strategies intended to complicate and generate conflict in maternal-fetal dynamics paralleling current methods used to maintain power over pregnant people's bodies. Another way maternal-fetal dynamics are complicated is through larger discourses of care that routinely are applied unfairly to pregnant people of color.

In chapter three, I read at-home fetal dopplers through a more extensive biopolitical history of Black visibility and invisibility, maternal-fetal conflict, and discourses of care. With historical lineages to 1662 Partus Sequitur Ventrem, the 1986 War on Drugs, 1990's criminalization of pregnant Black women, and modern fetal heartbeat legislation, I argue that at-home fetal dopplers have similar affective-diagnostic rhetoric to recent criminalization efforts which both engage in fetal health rhetoric and maternal-fetal conflict. I make this argument by analyzing user engagement with at-home fetal dopplers, sometimes referred to as handheld ultrasound devices, that can be bought over the counter and do not provide images. When the use of a device that, unlike fetal ultrasounds, does not provide a fetal image is visually broadcasted, pregnant people are forced to center themselves and their visibility. But again, as I established in chapter two, this phenomenon legitimizes notions of fetal personhood. This time through the idea of "fetal heartbeats." Moreover, at-home fetal dopplers on YouTube provide an opportunity to think through the ramifications of fortifying "fetal heartbeats" and centering one's pregnant corporeality for people whose visibility as pregnant has proven problematic.

The three chapters work together to present how ultrasound technology, like fetal rhetoric, has a complicated history that foresees its scattering across different visual mediums. Ultrasound technology is no longer only a hybrid affective-diagnostic tool in medicine, nor is it simply a vehicle for connection between pregnant people and their bodies. As evidenced by my dissertation, it is a part of a larger politics of networked space and legislative space. Instances of fetal ultrasonography being used outside of medicine remains critically untheorized. This dissertation is an attempt to recognize the complexity of this field through an analysis of ideological and institutional structures in which such videos are embedded. But, I cannot claim to

have comprehensively analyzed this phenomenon. I have done my best to present a material-discursive close reading of case studies to suggest that fetal ultrasounds on YouTube are another biopolitical device that not only has an impact on reproductive care but is directly linked to the ways we think through and talk about fetuses. But this dissertation does have some limitations. The first gap in my research lies in the impossibility for me to comprehensively analyze all case studies on the topic of fetal images and fetal ultrasounds on YouTube.

Moreover, I do not claim that this dissertation addresses a representative sample. Second, my methodology does not include ethnographic research. With the absence of such engagement with individual participants, we can never be sure how and why they engage with fetal ultrasounds on YouTube in the ways that they do. Future research on this topic could engage with users while going beyond YouTube as fetal rhetoric is presented in different, more resistance-based forms on Twitter, TikTok, and other information and video-sharing platforms. For example, online modes of resistance to anti-abortion sanctity around a fetus and reproduction can be found in sometimes shocking forms on TikTok, a social network hosting short-form self-published videos. Through playful and sometimes surprising commentary on the anti-abortion communities online, pro-choice TikTok videos criticize affective notions of fetal imagery while developing resistance to old ways and promoting new ways of thinking through life and reproduction. A consideration of radical, transgressive, and sometimes satirical online engagements with anti-abortion rhetoric could have been its own dissertation entirely. But in order to consider those future instantiations, my dissertation needed to lay the groundwork of what that resistance was resisting.

In the TikToks found under the popular hashtag #fetusdeletus, affect is mocked. #Fetusdeletus, a play on Harry Potter spell language, is a fictional spell meant to delete a fetus instantly. Another common term used in these online resistance spaces is yeet, colloquially used instead of toss, a reference to "Baby Yeet" or "Woman Throws a Baby" an artwork by Joan Cornellá where a woman throws a baby like a basketball. Baby Yeet and other provocative fetal references can be found under #fetusdeletus now hosting more than seven million videos. In many ways, Baby Yeet is an ironic political reference to the plethora of sensationalized and disturbing media stories about parental infanticide, specifically neonaticide in the form of throwing a newborn into the trash. Some of these media stories are more examined than others. Moreover, future research on fetal ultrasounds can bring to light the unexamined ways ultrasounds are complicit in biopower and reproductive criminalization.

While the criminalization of pregnant people and the biopolitical control over the womb has been examined by scholars like Michele Goodwin and Dorothy Roberts, I still contend that there is more research to be done to directly link criminalization to fetal ultrasounds. While I recognize that there are multiple medical conduits complicit in the targeting and prosecuting of vulnerable pregnant populations, fetal ultrasounds are a powerful device with fundamental connections to visibility that make its interpretation and application that much more dangerous. As Michele Goodwin presents, the interpretation of ultrasound imaging has been used to generate a court order granting permission to both the doctor and hospital to perform a non-consensual cesarean operation.[235]

[235] On p.96 Goodwin discusses how, in 2004, Pennsylvania physicians "obtained a court order to force Amber Marlowe to deliver by cesarean section because ultrasound imaging indicated that her baby might weigh as much as thirteen pounds".

Moreover, in the same way, that medical staff are now implicated in the "civil and criminal punishment of pregnant women," ultrasounds and their culturally defined affective interpretation are also implicated in both criminal punishment and campaigns to limit a pregnant person's right to choose.[236] Moreover, combining the discussion of the criminalization of pregnant people with biopolitical reproductive monitoring devices will inevitably lead researchers to consider fetal ultrasounds and their powerful connection to visibility.

In the frequent and recurring search to understand the numerous ways in which power is exerted on pregnant bodies, research into fetal ultrasounds used outside prenatal care needs to be a concern. Without it, fetal discourse fails to acknowledge the communities of people presumed to be outside of the political rhetoric but who are still implicated in the form of rhetoric fundamental to how biopolitical power is exerted on pregnant bodies. Considering these communities can be fruitful for thinking through how we, as a society, define, consider, and refer to fetuses and what this means for accepted understandings of parenthood, motherhood, and pregnancy.

[236] Ibid.

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